TENTATIVE

SHARP SERVICE MANUAL

S81Z3DV-740XX

DVD VIDEO PLAYER

MODEL DV-740/T DV-740X/W

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified be used.

CONTENTS

SHARP CORPORATION

1. IMPORTANT SAFEGUARDS AND PRECAUTIONS

Note:
This unit can be used only where the power supply is AC 100V-240V, 50/60Hz. It cannot be used elsewhere.

CAUTION:

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.
AS THE LASER BEAM USED IN THIS PLAYER IS HARMFUL TO THE EYES, DO NOT ATTEMPT TO DISASSEMBLE THE CABINET. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

WARNING:
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

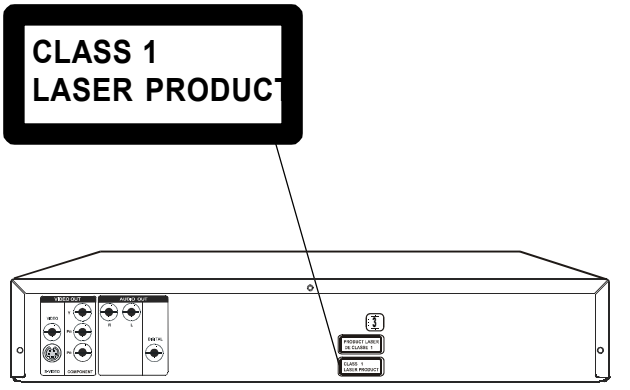
Laser Diode Properties
Material: AlGaInP
Wave length: 635 nm
Emission Duration: Continuous
Laser output: Max. 0.5 mW

Power Lead Protection

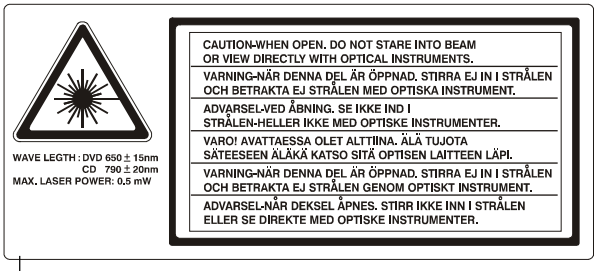
To avoid any malfunctions of the unit, and to protect against electric shock, fire or personal injury, please observe the following,

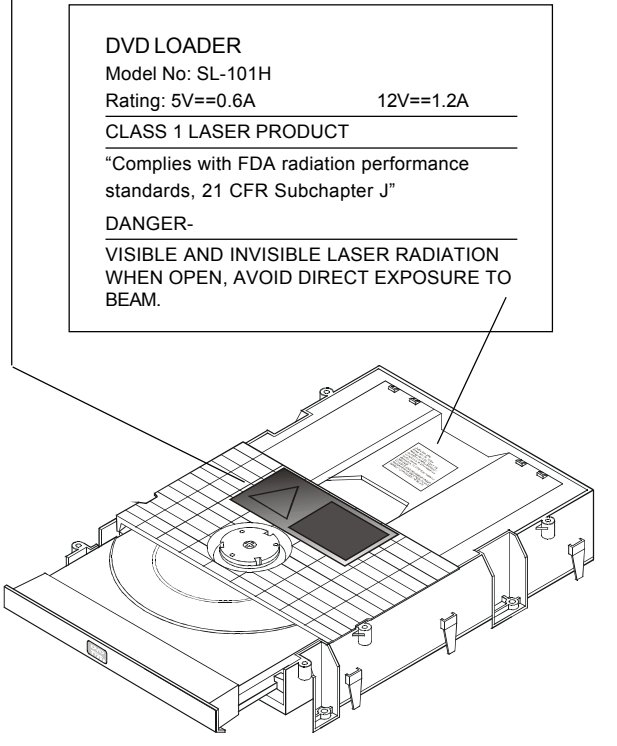
- Hold the plug firmly when connecting or disconnecting the AC power lead.
- Keep the AC power lead away from heating appliances.
- Never put any heavy object on the AC power lead.
- Do not attempt to repair or reconstruct the AC power lead in any way.

- This player is classified as a CLASS 1 LASER product.
- The CLASS 1 LASER PRODUCT label is located on the rear cover.
- This product contains a low power laser device. To ensure continued safety do not remove any cover or attempt to gain access to the inside of the product. Refer all servicing to qualified personnel.



(Rear of product)





2. FEATURES

- Playback of DVD, VIDEO CD, and Audio CD
- Dolby Digital*2, DTS*3, MPEG Audio digital out

*1 Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol (DD) are trademarks of Dolby Laboratories.
*2 "DTS" and "DTS Digital Surround" are trademarks of Digital Theater Systems, Inc.

3. SPECIFICATIONS

TYPE	SPECIFICATION	
Power Supply type	Switch Mode Power Supply	
Input Voltage	AC100V~240V(Auto Voltage Swithcing)	
Mains Frequency	50/60Hz	
Standby Power Consumption	Less than 5W	
Power Rating	Less than 20W	
Signal System	NTSC/PAL	
Disc compatibility	DVD,VCD,VCD2.0,SVCD,CD-DA,MP3, CD-R,CD-RW	
Operating Temperature Range	+5°C ~ +40°C	
Media Format	(1)DVD single side/single layer ;single side/double layer double side/single layer ;double side/double layer (2)CD-DA 12cm CD 8cm CD CD-R CD-RW (3)MP3 (4)VCD	
Video Signal	Composite Output Level: 1.0±0.15Vp-p(75ohm)	
	S-Video Output Level:	
	Y	1.0±0.15Vp-p
	C	0.286±0.05Vp-p
	BURST	0.30±0.06V
	Y.U.V Output Level:	
	Y-CH	1.0±0.15Vp-p
	U-CH	1.0±0.15Vp-p
	V-CH	1.0±0.15Vp-p
	R.G.B Output Level:	
		1.0±0.15Vp-p
		1.0±0.15Vp-p
		1.0±0.15Vp-p
Remark:The video output connectors are optional in line with various models of products.		
Audio Signal	Output Level:	2.0±0.2 Vrms(at 1KHz)
	Freq Resp	±1dB
	S/N	105dB
	Dynamic Range(1kHz)	96dB
	Distortion&Noise(1kHz)	≤-65dB
Digital Output	Coaxial	
Remark:The digital output connectors are optional in line with various models of products.		

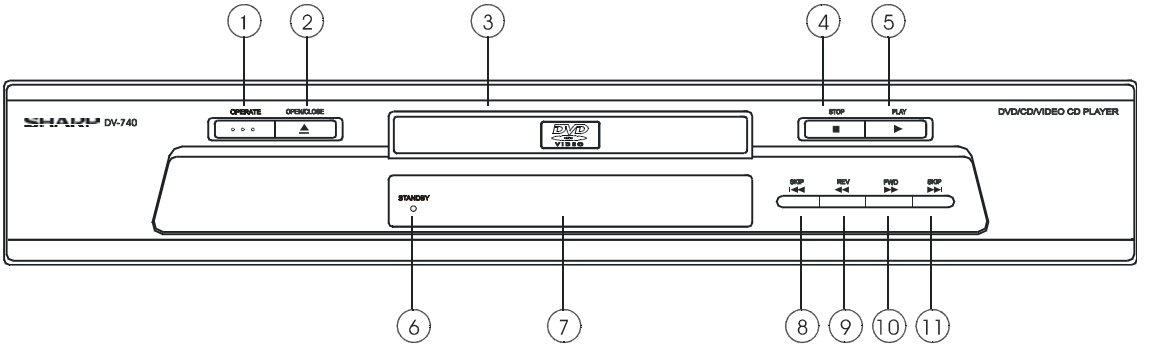
Specifications are subject to change without notice.
Weight and dimensions are approximate.
Digital Output (Linear PCM)
The digital output format (optical or coaxial) used in this Player is linear PCM audio sampled at 44.1 kHz or 48 kHz.
Linear PCM sound for DVD video discs sampled at 96 kHz cannot be output digitally.
Check the disc jacket for information on the audio sampling used.

3-1. ACCESSORIES

Accessories: Video/Audio(L/R) cable x 1, AAA (UM4) batteries x 2, Remote control unit x 1, Operation Manual x 1,

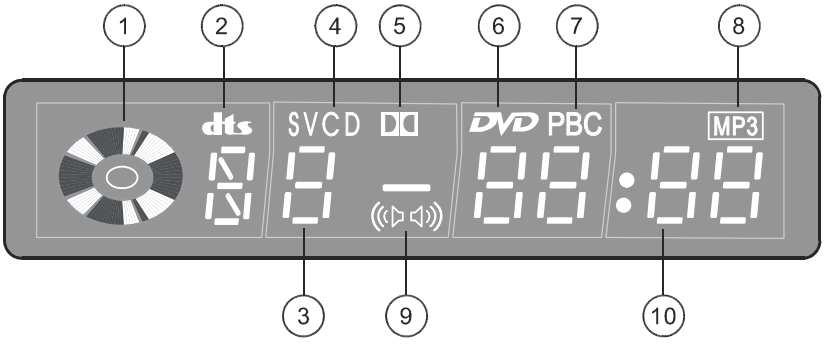
4. PART NAMES

4-1 Main Unit(Front)



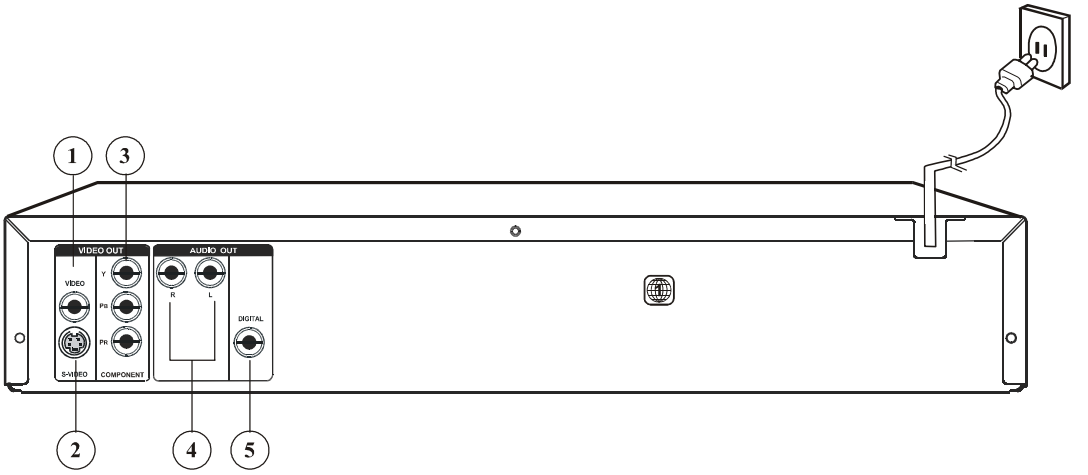
1. **OPERATE Switch Button**
   Turn the unit's power on and off.
2. **OPEN/CLOSE Button**
   Open or closes the disc tray.
3. **Disc Tray**
   To place DVD, VCD, Audio CD, and MP3 discs on.
4. **STOP Button**
   Stop playback.
5. **PLAY Button**
   Play the inserted disc.
6. **STANDBY Indicator**
   LED Indicator of Standby mode.
7. **Display Window**
   Display operation information.
8. **⏮SKIP Button**
   Go to the previous chapter/track during playback with DVD/ VCD/Audio CD. It functions as "Go to the previous page" in the PBC menu with VCD discs.
9. **◀◀ REV Button**
   Reverse scans.
10. **FWD ▶▶ Button**
    Forward scan.
11. **SKIP⏭ Button**
    Go to the next chapter/track during playback with DVD/ VCD/Audio CD. It functions as "Go to the next page" in the PBC menu with VCD discs.

4-2 Front panel Display in Main Unit



1. **Disc inside indicator**
2. **DTS® Digital Audio Indicator**
   Indicate the disc played contains DTS® Digital audio encoding.
3. **Title/Track Number Indicator**
   Some DVDs contain multiple title pages. This indicator displays the title number currently in use or track number (Audio CD) currently playing.
4. **SVCD/Audio CD/VCD Indicator**
   Identfy the inserted disc as audio SVCD and Audio CD or Video CD.
5. **Dolby® Digital Audio Indicator**
   Indicate the played disc contains Dolby® Digital Audio encoding data.
6. **DVD Indicator**
   Identfy the inserted disc as a DVD disc.
7. **PBC Indicator for VCD Disc**
   Playback Cntrol indicator.
8. **MP3 Indicator**
   Identfy the inserted disc as a MP3 disc.
9. **Analog Audio Output Indicator**
   Indicate the audio sound output from analog audio jacks when playing back VCD/SCVD/Audio CD.
10. **Elapsed Playback Time/Remaining Playback Time Indicator**
    Display elapsed playback time and playback remainder time.

4-3 Main Unit(Rear)



1. **VIDEO OUT jack**

   Connect a standard video cable here when connecting to a TV with a video input jack.

2. **S-VIDEO OUT jack**

   Connect an S-VIDEO cable here when connecting to a TV with an S-VIDEO input jack. This type of connection provides Superior picture quality.

3. **COMPONENT OUT (Y/PB/PR) jacks**

   Connect a standard COMPONENT (Y/PB/PR) cable here when connecting to a TV COMPONENT (Y/PB/PR) input jack.

4. **R/L AUDIO OUT jacks**

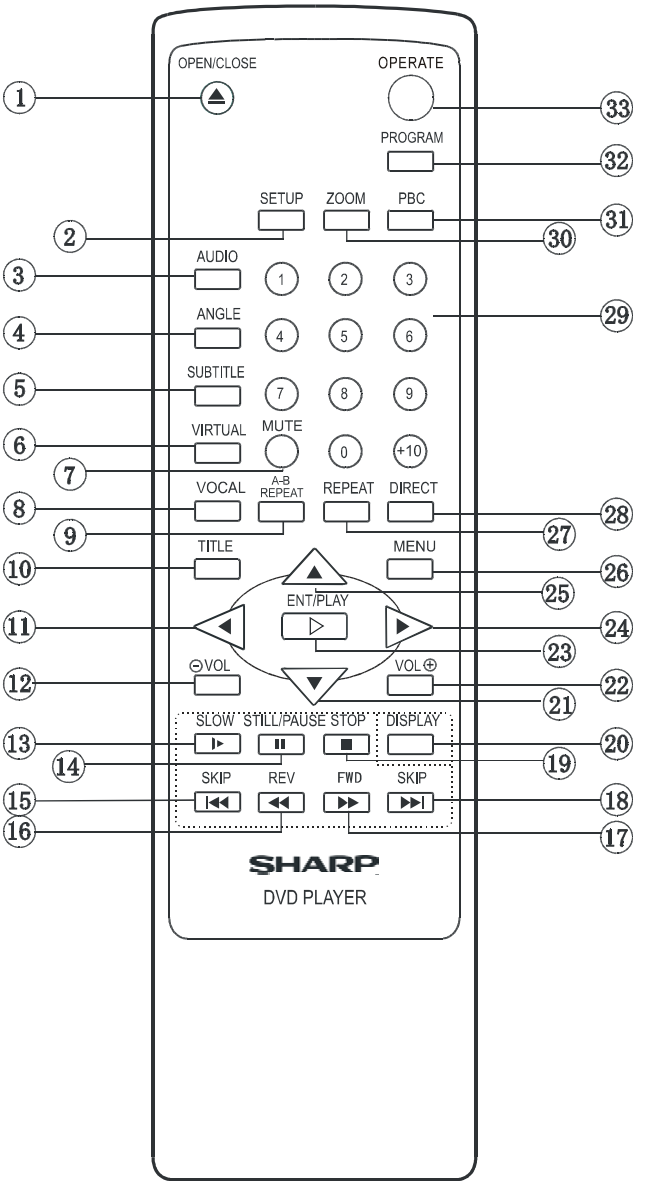
   Connect standard audio cable here when connecting to a TV or audio input jack.

5. **DIGITAL OUT (Coaxial) jack**

   Connect a coaxial cable here when connecting to a device with a coaxial digital audio input jack.

5. REMOTE CONTROL UNIT

1 OPEN/CLOSE Button
2 SETUP Button
3 AUDIO Button
4 ANGLE Button
5 SUBTITLE Button
6 3D Surround Sound Button
7 MUTE Button
8 VOCAL Button
9 A - B Button
10 TITLE Button
11 Cursor Left Key
12 Volume Level Reducing Button
13 SLOW Button
14 STEP Button
15 PREVIOUS Button
16 FAST REVERSE Button
17 FAST FORWARD Button
18 NEXT Button
19 STOP Button
20 DISPLAY Button
21 Cursor Down Key
22 Volume Level Increasing Button
23 ENTER/PLAY Button
24 Cursor Right Key
25 Cursor Up Key
26 MENU Button
27 REPEAT Button
28 GOTO Button
29 Numeric Buttons
30 Zoom Button
31 PBC Button
32 PROGRAM Button
33 POWER/STAND BY Button

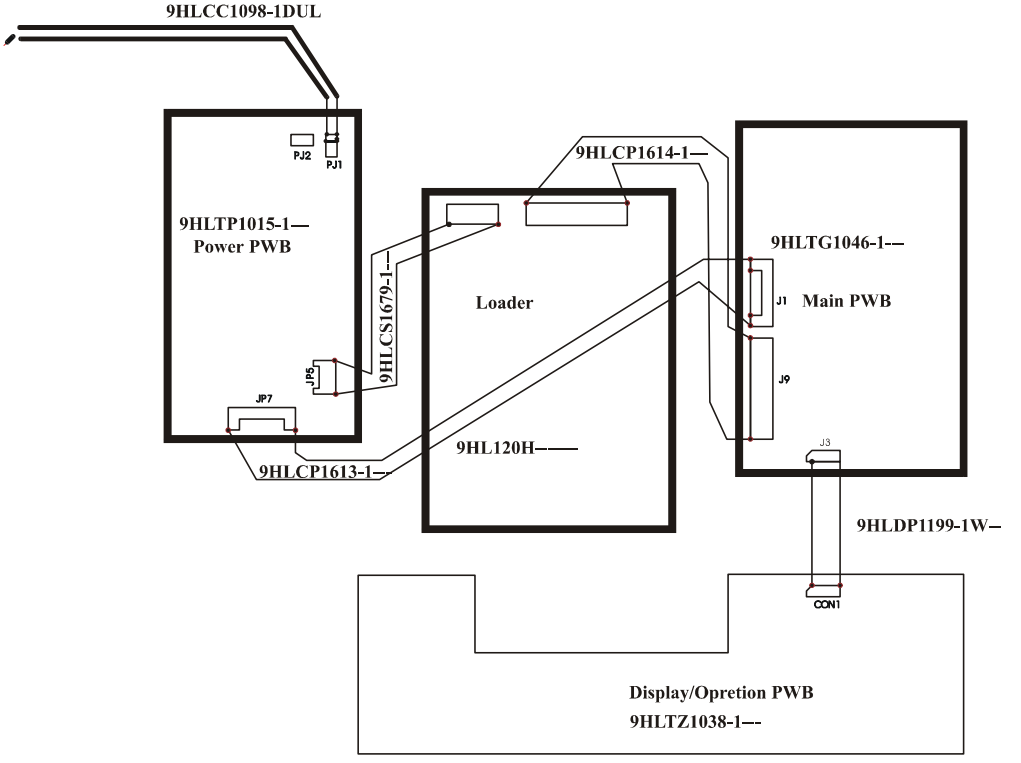


6. EXTENSION CABLE USE POINT

EXTENSION CABLE LIST

141	9HLCP1614 -1- - -	J2	Loader to Main Board 40Pin
142	9HLCS1679 -1- - -	JP5	Power Board to Loader 4Pin
143	9HLDP1199 -1W - -	CN1-J3	Panel Board to Main Board 12Pin
144	9HLCP1613 -1 - - -	JP7-J1	Power Board to Main Board 14Pin

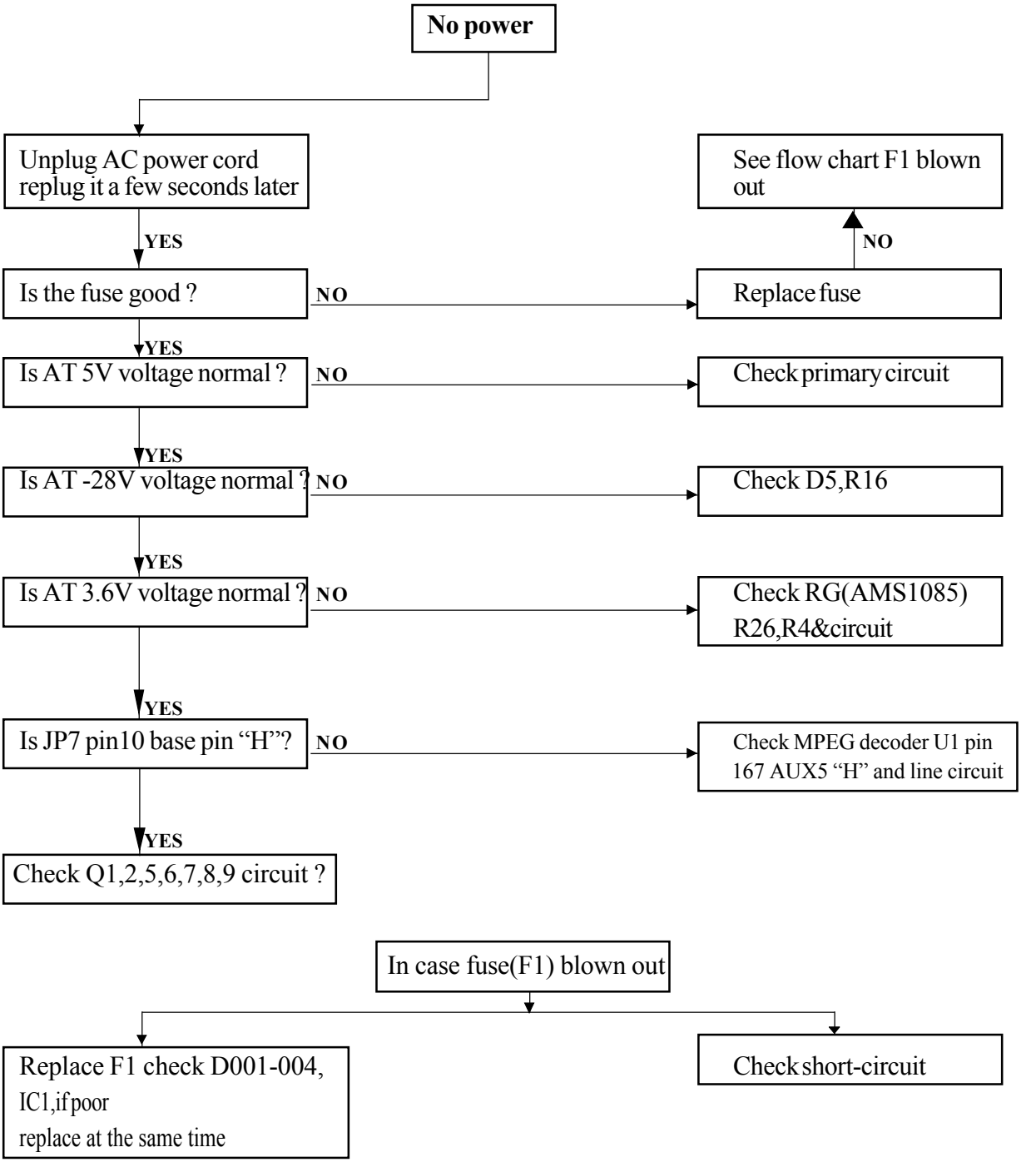
MECHANISM EXPLODED VIEW

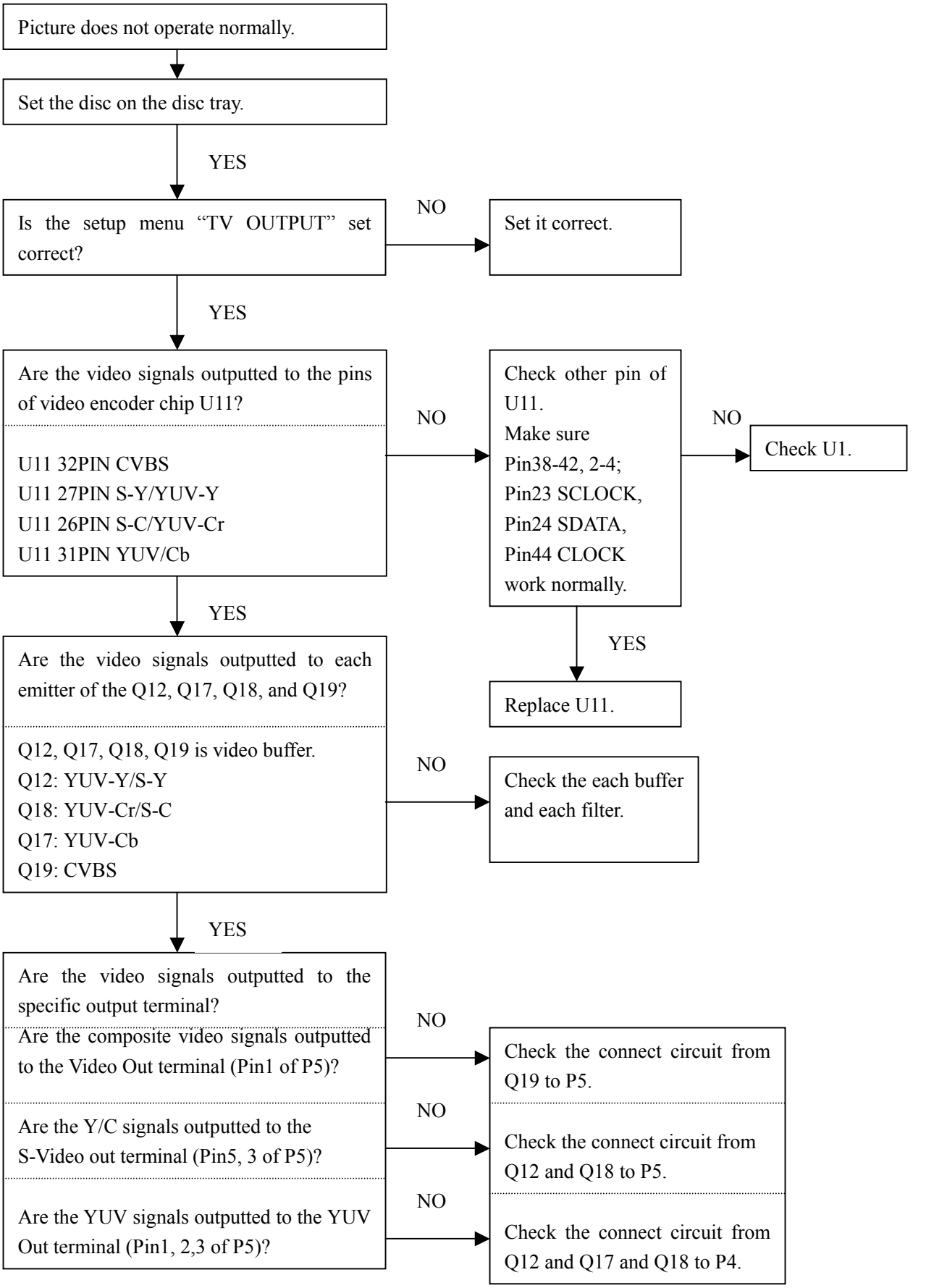


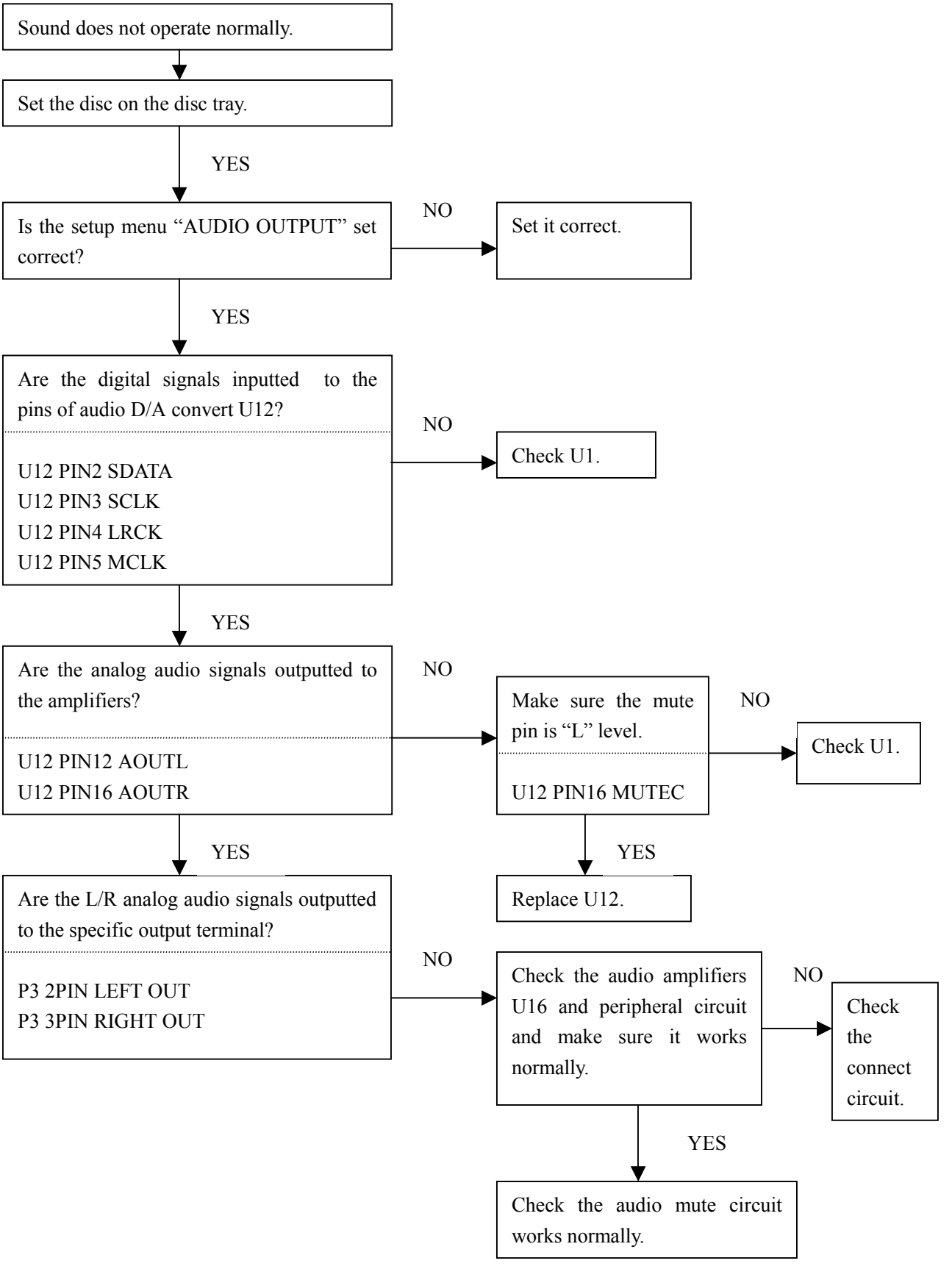
7. SERVICE

TROUBLESHOOTING FLOW CHART

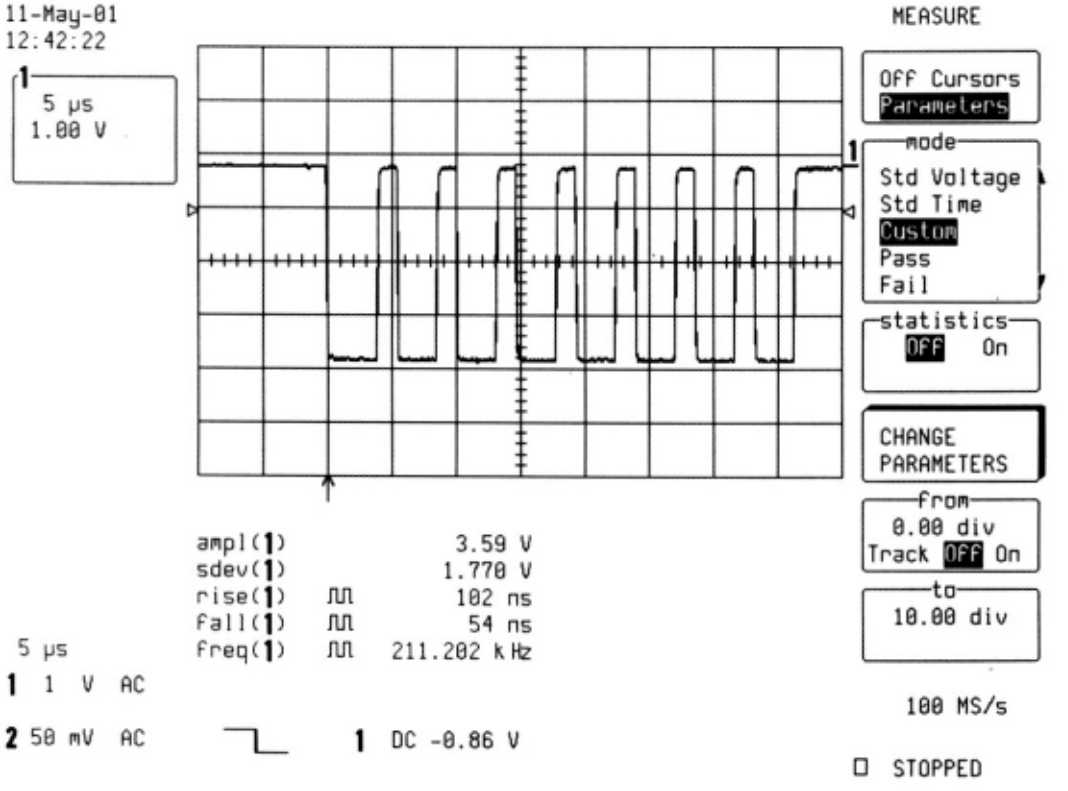
Power troubleshooting



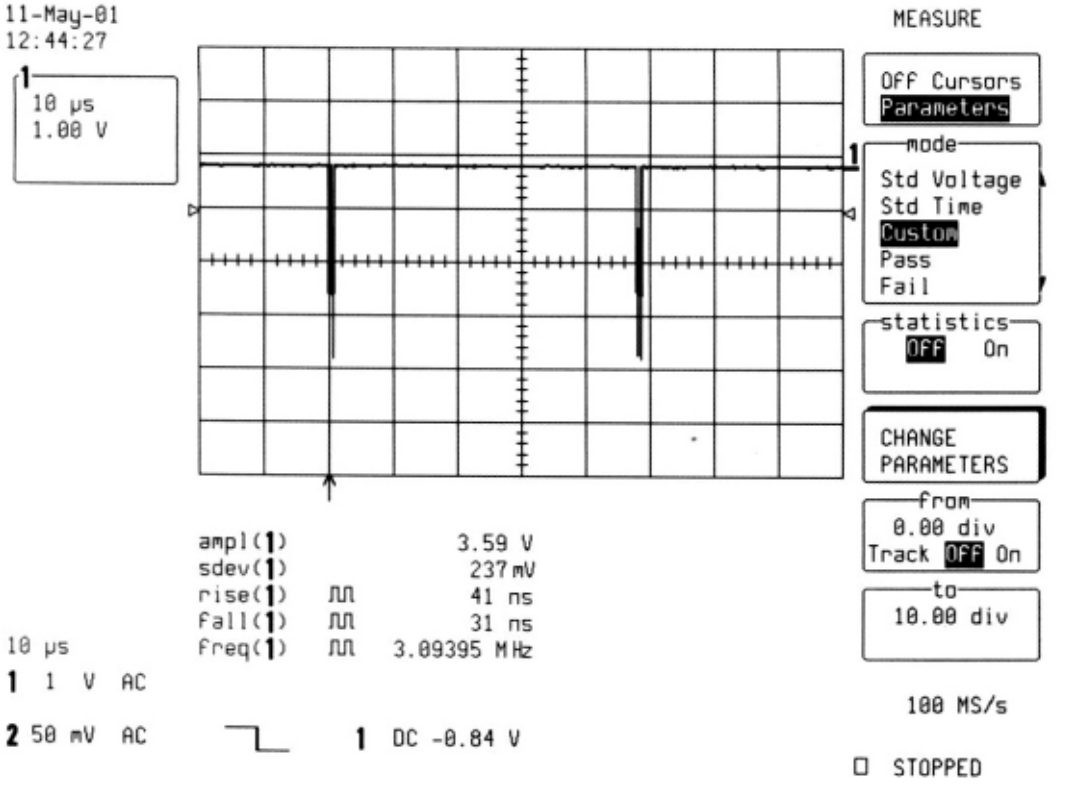

Picture does not operate normally.
Set the disc on the disc tray.
YES
Is the setup menu "TV OUTPUT" set correct?
NO
Set it correct.
YES
Are the video signals outputted to the pins of video encoder chip U11?
U11 32PIN CVBS
U11 27PIN S-Y/YUV-Y
U11 26PIN S-C/YUV-Cr
U11 31PIN YUV/Cb
NO
Check other pin of U11.
Make sure
Pin38-42, 2-4;
Pin23 SCLOCK,
Pin24 SDATA,
Pin44 CLOCK
work normally.
NO
Check U1.
YES
Replace U11.
YES
Are the video signals outputted to each emitter of the Q12, Q17, Q18, and Q19?
Q12, Q17, Q18, Q19 is video buffer.
Q12: YUV-Y/S-Y
Q18: YUV-Cr/S-C
Q17: YUV-Cb
Q19: CVBS
NO
Check the each buffer and each filter.
YES
Are the video signals outputted to the specific output terminal?
Are the composite video signals outputted to the Video Out terminal (Pin1 of P5)?
NO
Check the connect circuit from Q19 to P5.
Are the Y/C signals outputted to the S-Video out terminal (Pin5, 3 of P5)?
NO
Check the connect circuit from Q12 and Q18 to P5.
Are the YUV signals outputted to the YUV Out terminal (Pin1, 2,3 of P5)?
NO
Check the connect circuit from Q12 and Q17 and Q18 to P4.


Sound does not operate normally.
Set the disc on the disc tray.
YES
Is the setup menu “AUDIO OUTPUT” set correct?
NO
Set it correct.
YES
Are the digital signals inputted to the pins of audio D/A convert U12?
U12 PIN2 SDATA
U12 PIN3 SCLK
U12 PIN4 LRCK
U12 PIN5 MCLK
NO
Check U1.
YES
Are the analog audio signals outputted to the amplifiers?
U12 PIN12 AOUTL
U12 PIN16 AOUTR
NO
Make sure the mute pin is “L” level.
U12 PIN16 MUTEC
NO
Check U1.
YES
Replace U12.
YES
Are the L/R analog audio signals outputted to the specific output terminal?
P3 2PIN LEFT OUT
P3 3PIN RIGHT OUT
NO
Check the audio amplifiers U16 and peripheral circuit and make sure it works normally.
NO
Check the connect circuit.
YES
Check the audio mute circuit works normally.

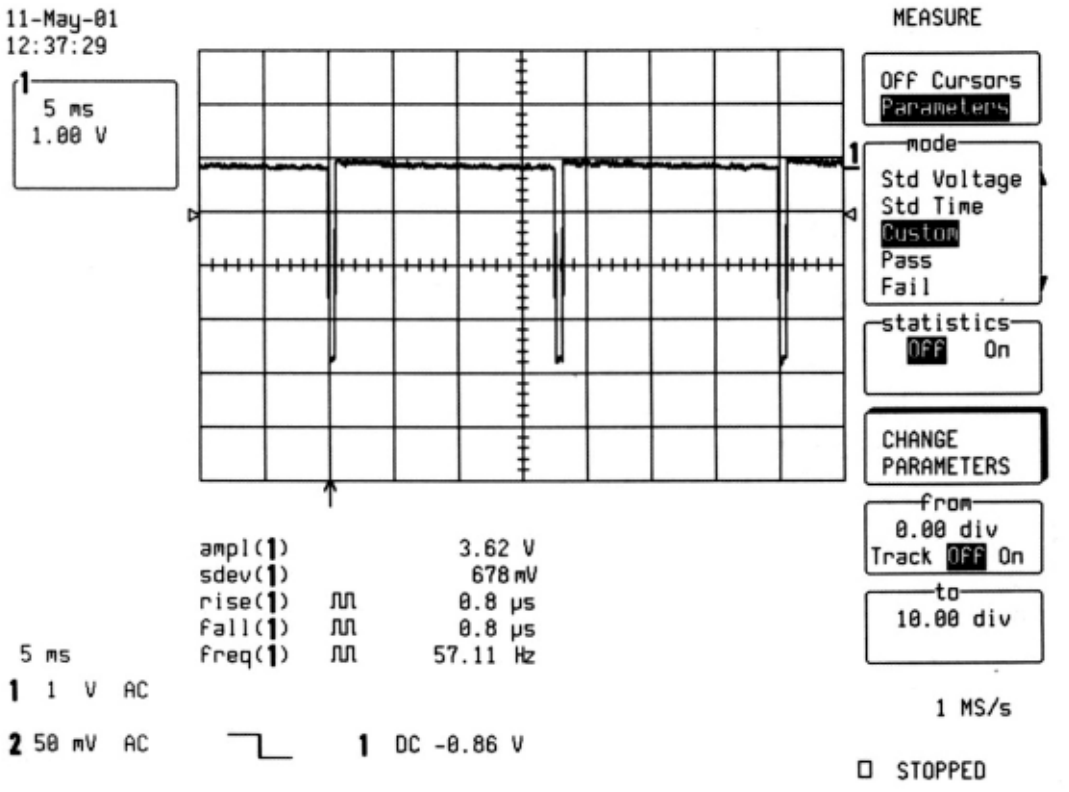
8. NORMAL WAVEFORM



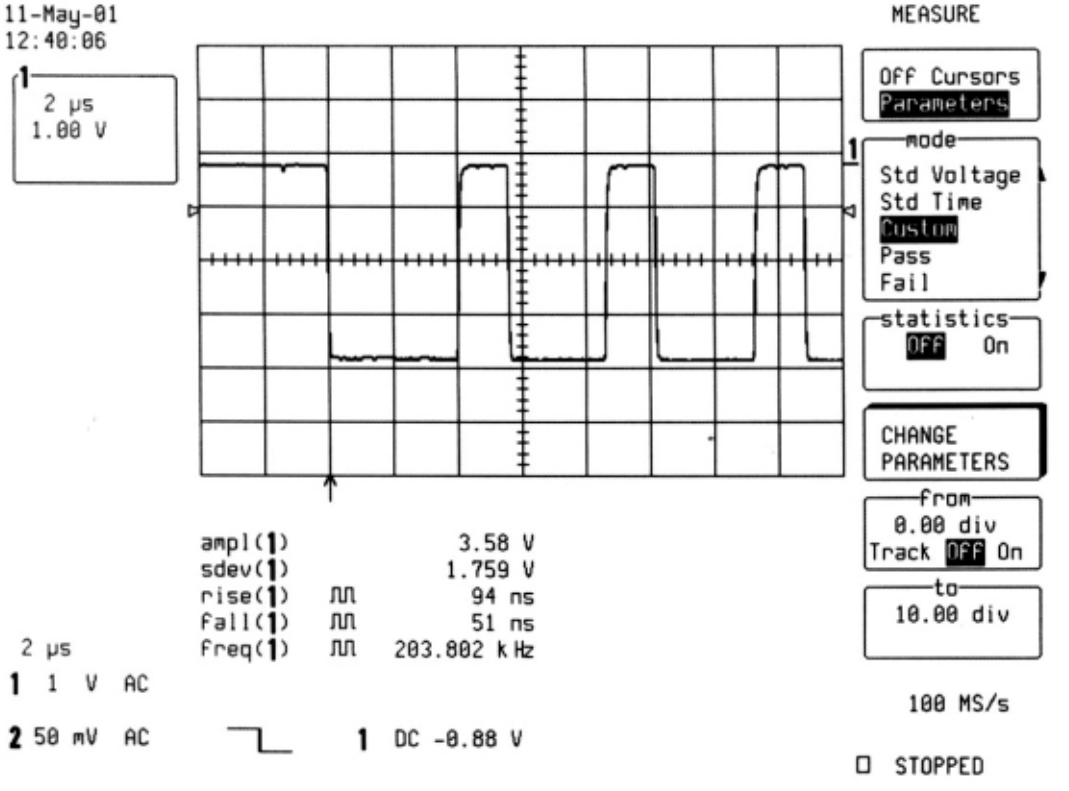
VFD-DATA : PIN8 OF J3



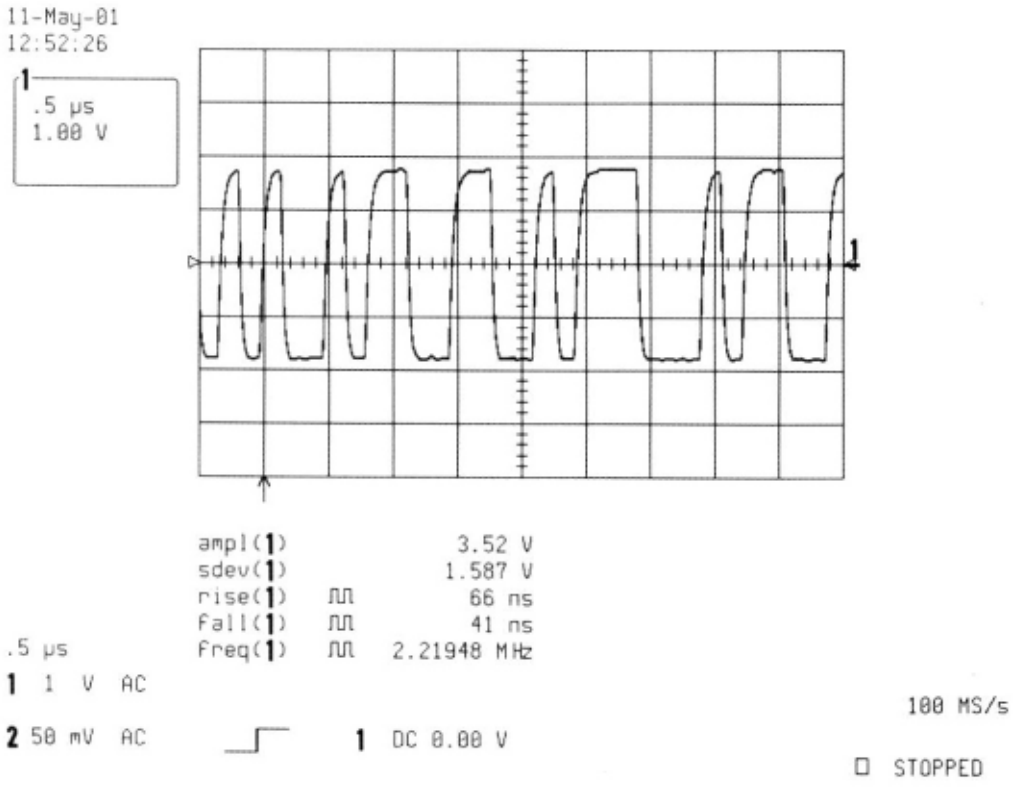
ROM-CS : PIN22 OF U4



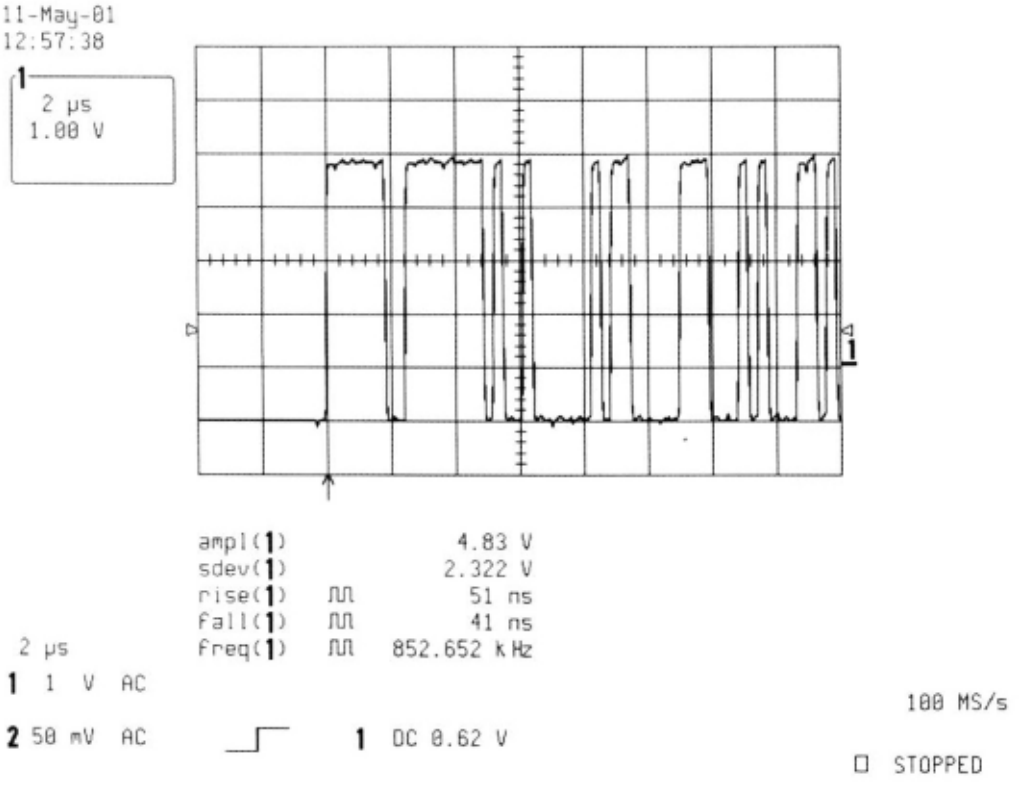
VFD-STB PIN10 OF J3



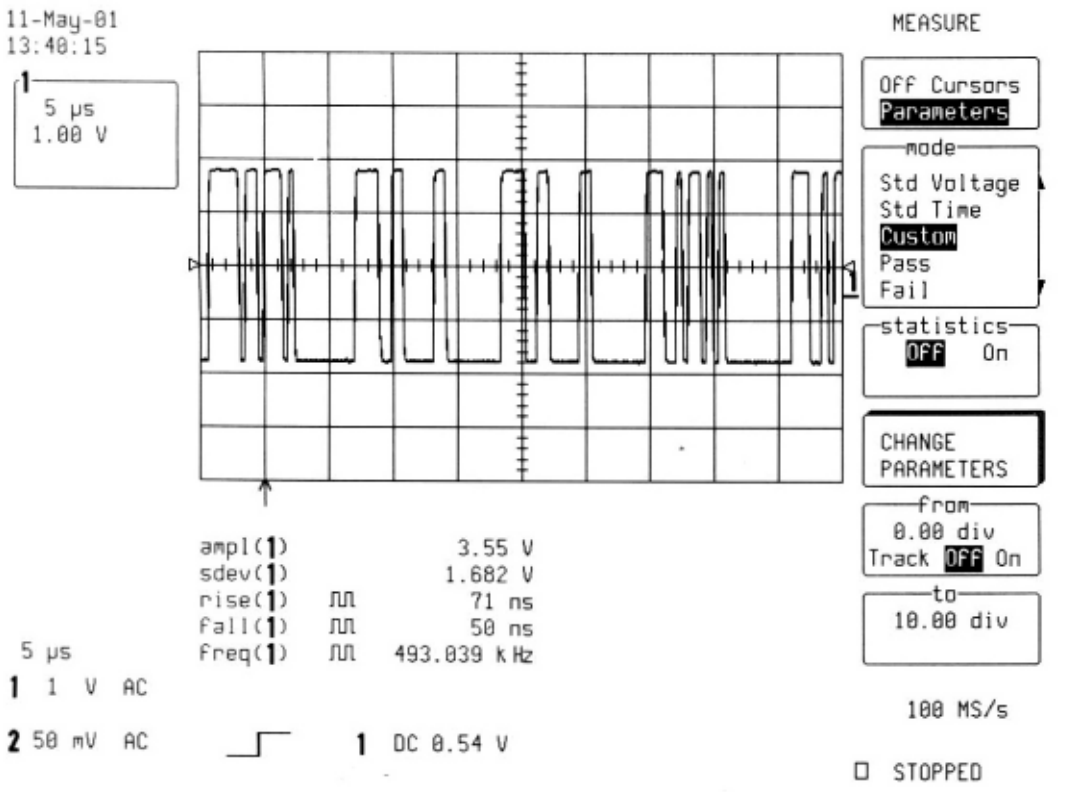
VFD-CLK : PIN9 OF J3



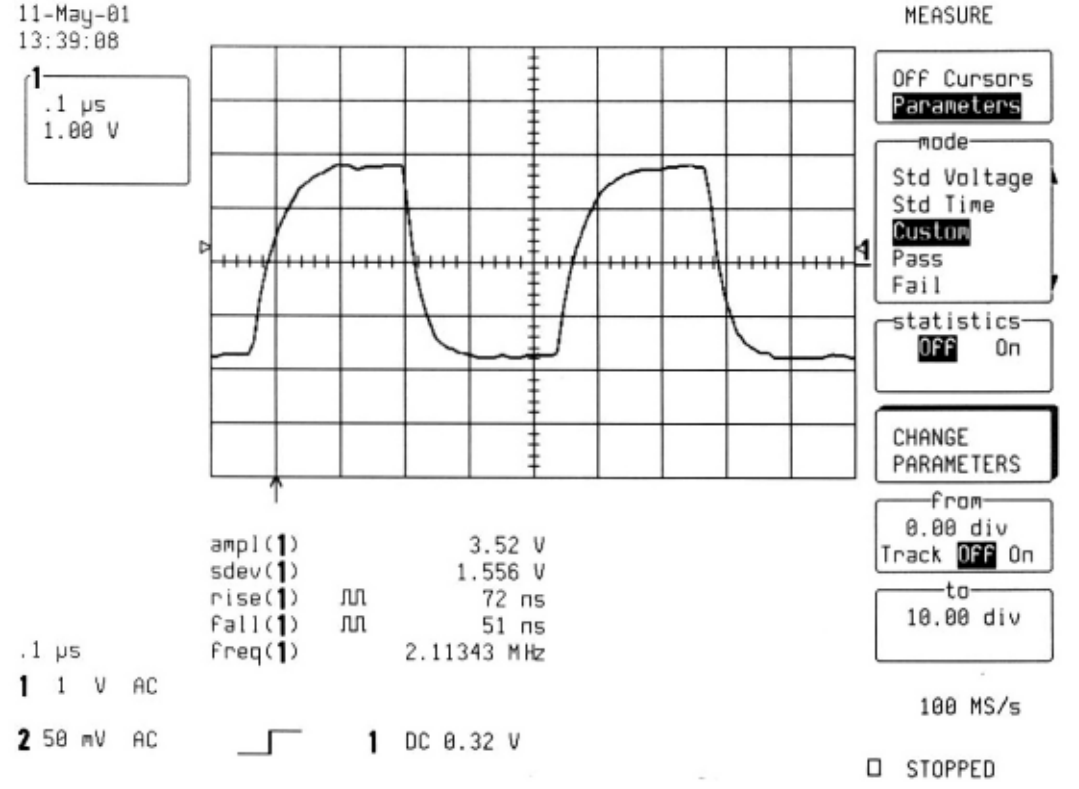
SPDIF : R129



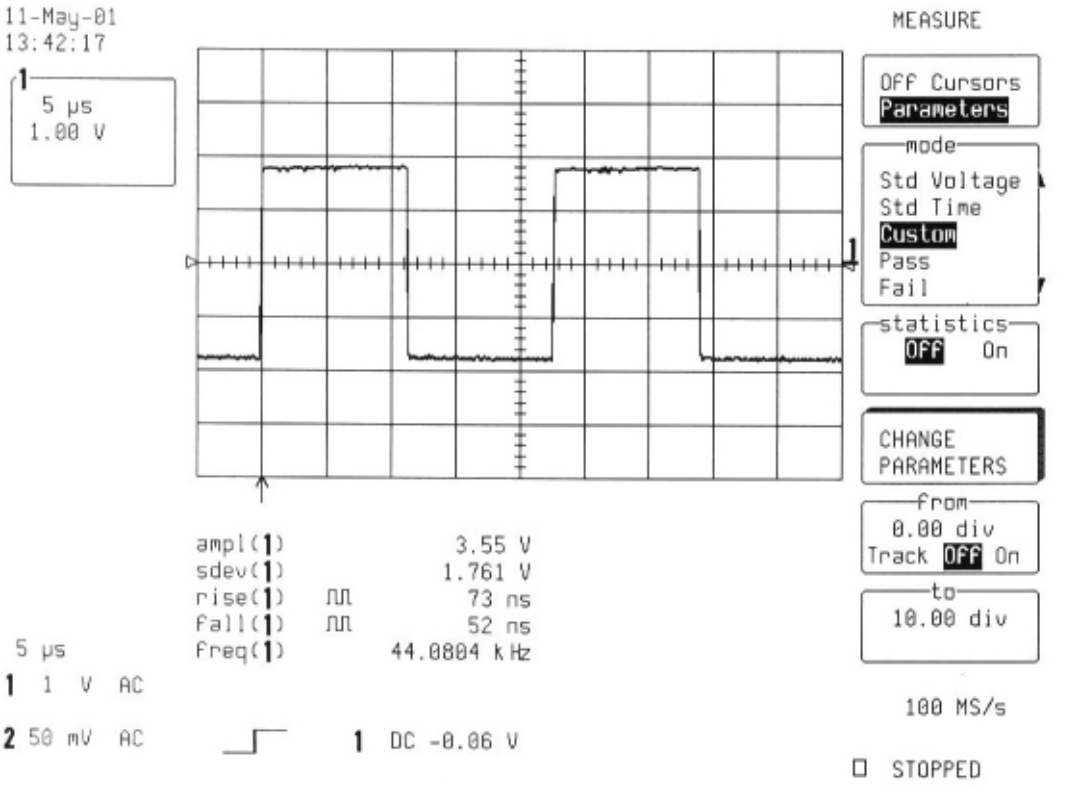
FE-DAIT : PIN3-18 OF J2



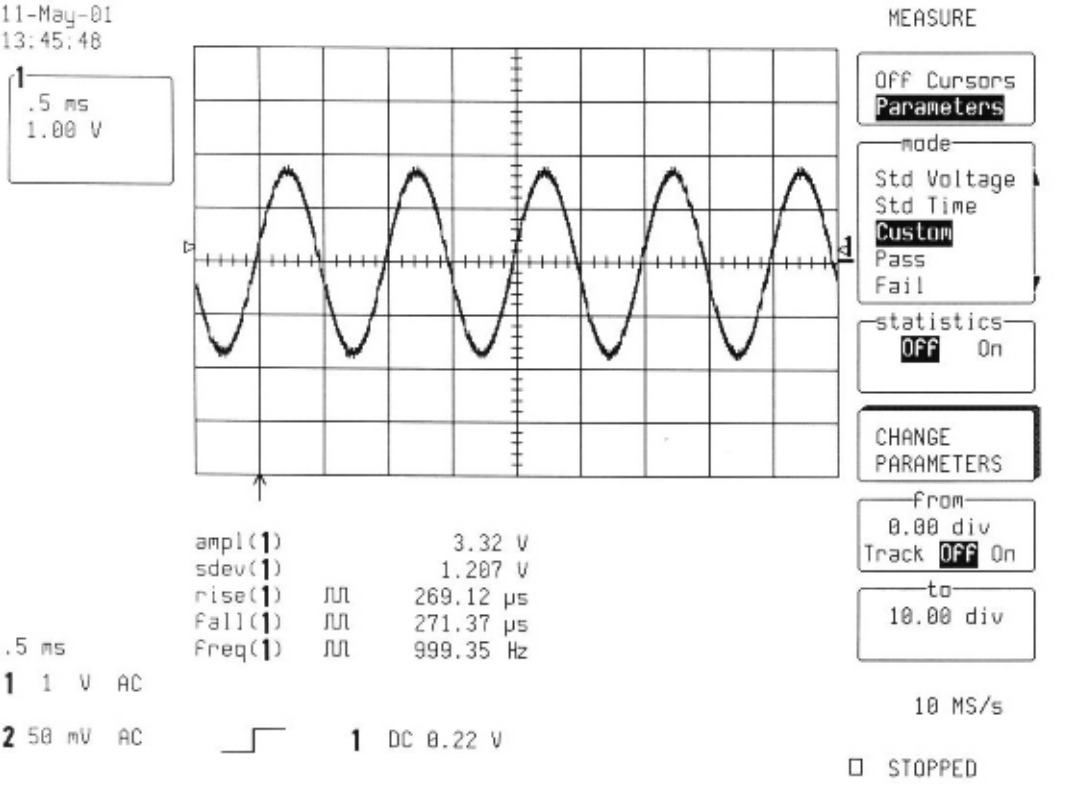
SDATA : PIN2 OF U12



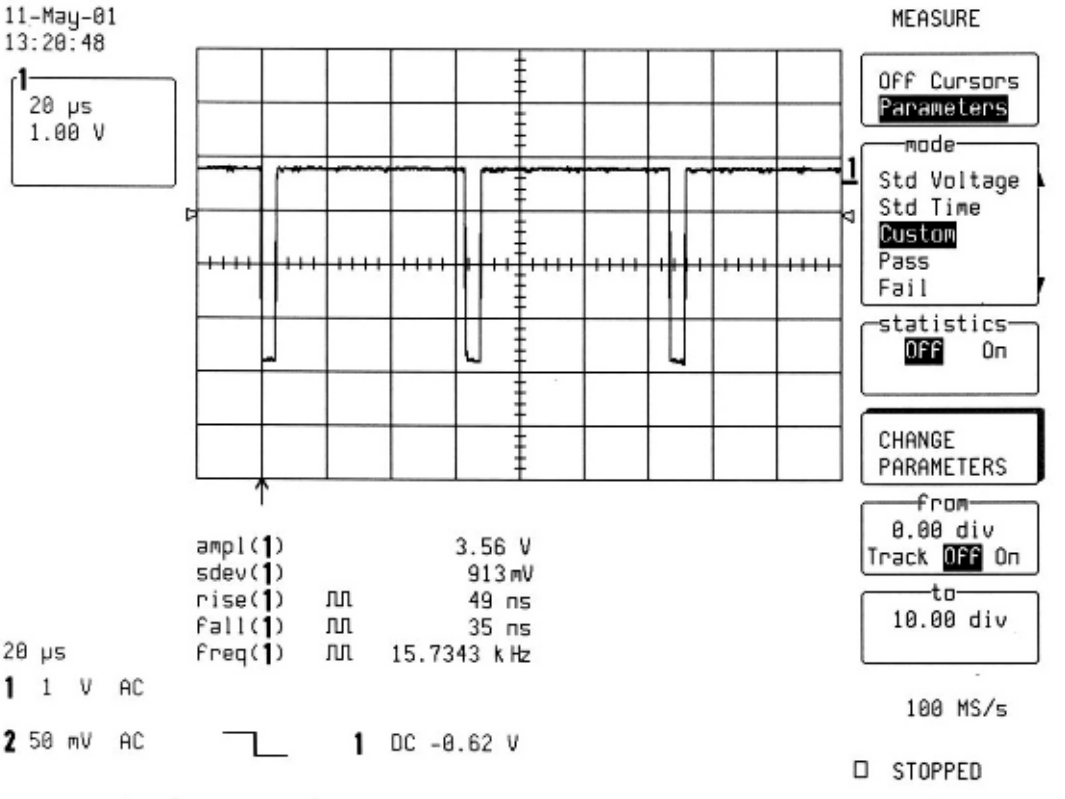
BCK : PIN3 OF U12



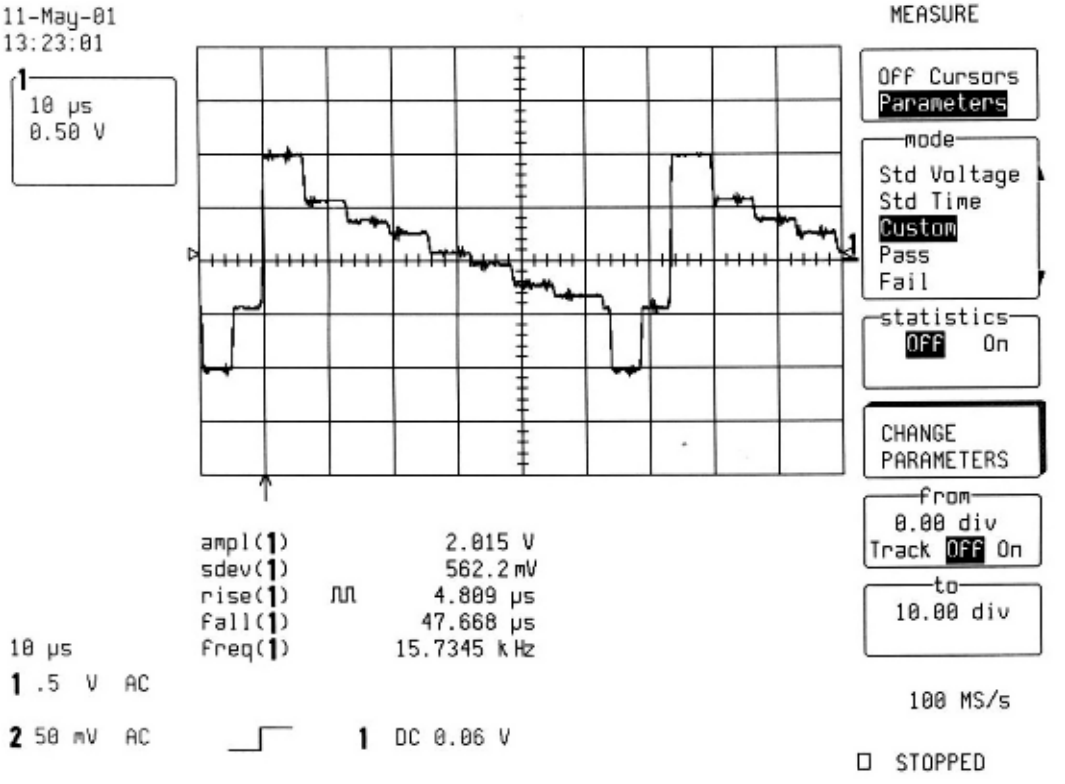
LRCK : PIN4 OF U12



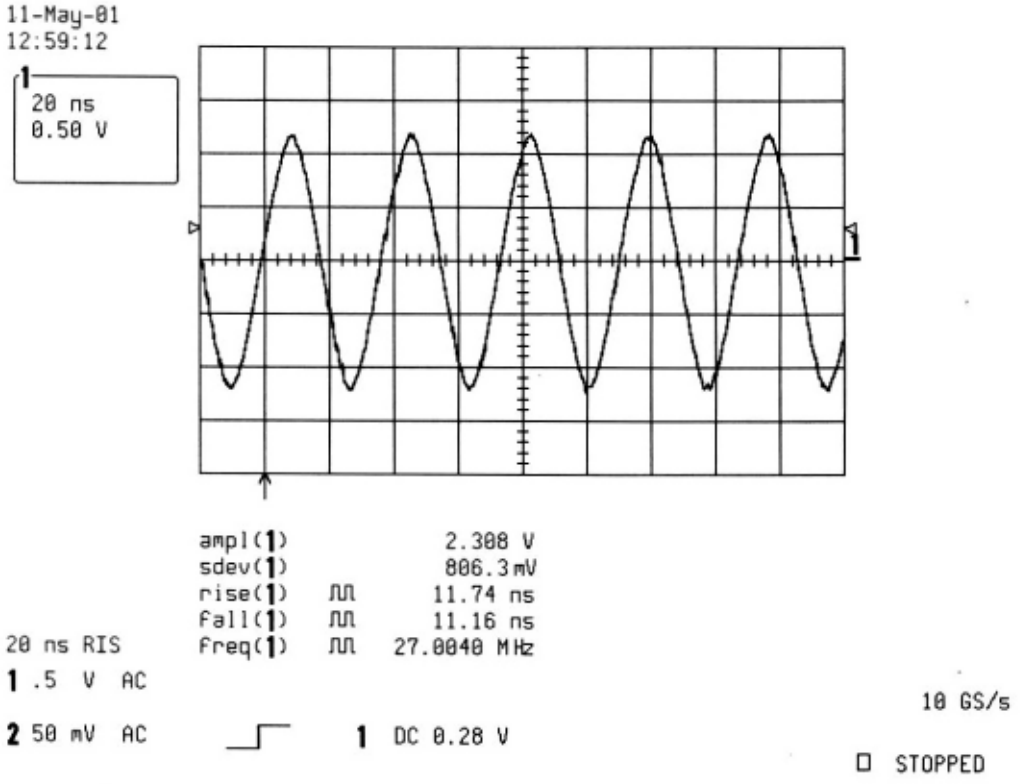
AOUT : PIN12&15 OF U12



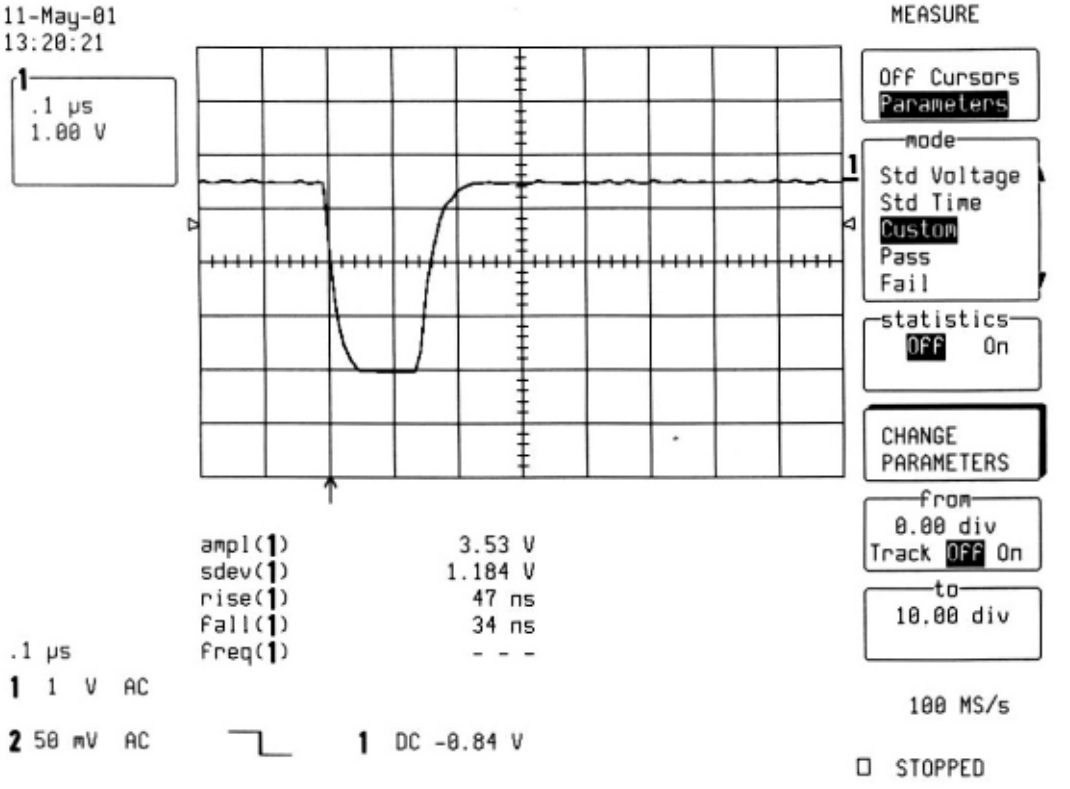
H-SYNC : PIN15 OF U11



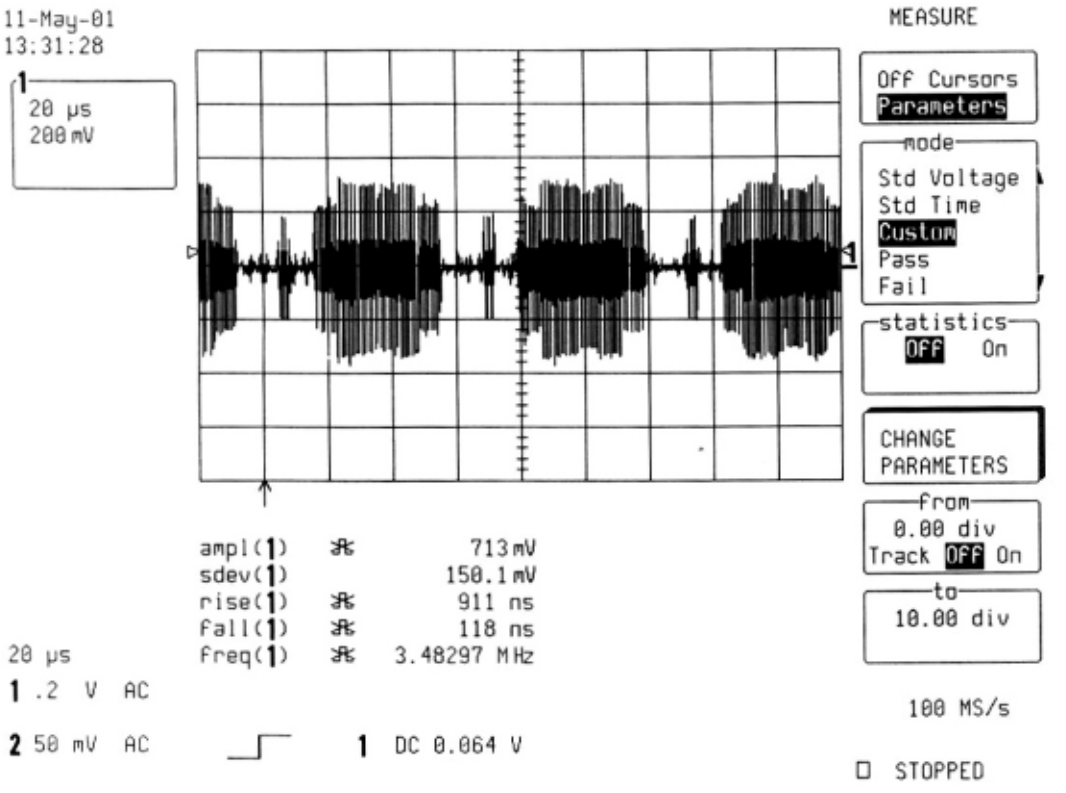
LUMA : PIN27 OF U11



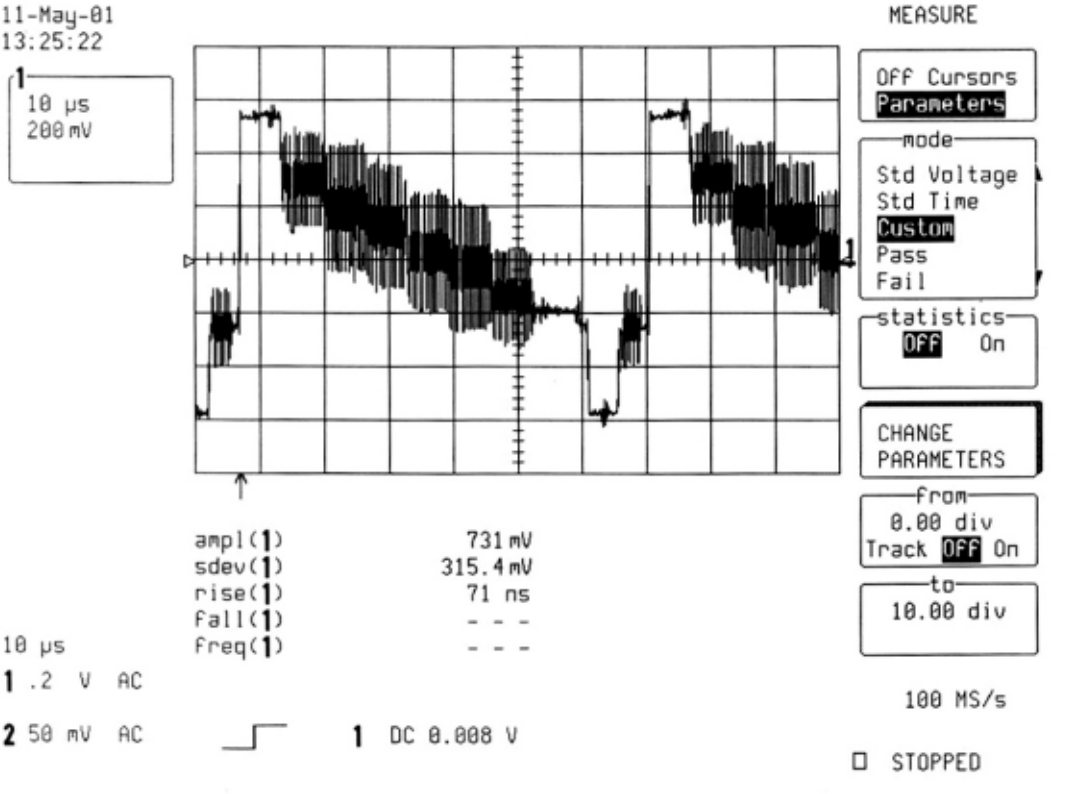
CLK27 : R63



V-SYNC : PIN16 OF U11



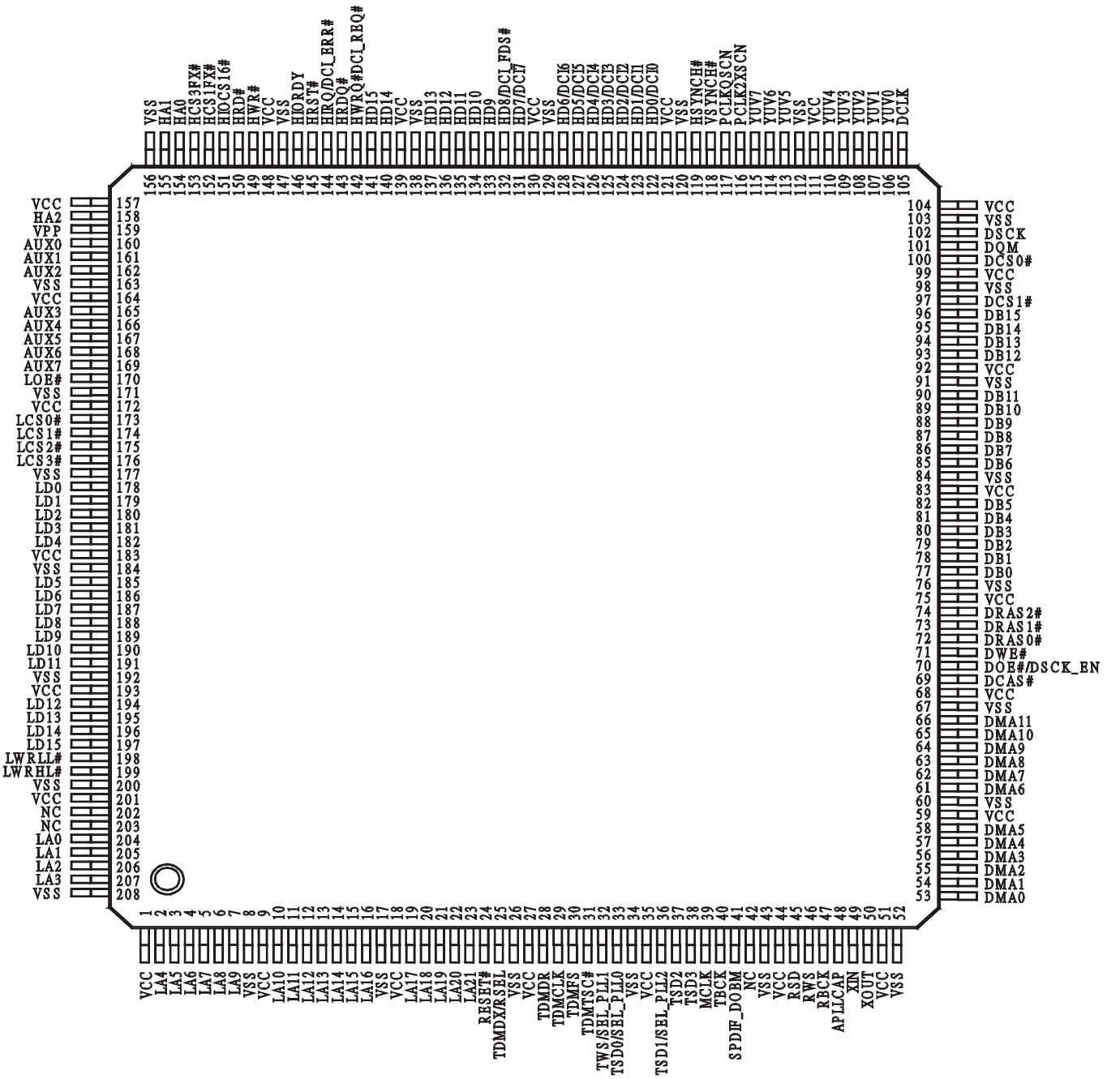
CHROMA : PIN26 OF U11



COMPOSITE : PIN32 OF U11

9. IC FUNCTION LIST

9 - 1. U1 ES4318 PINOUT DIAGRAM



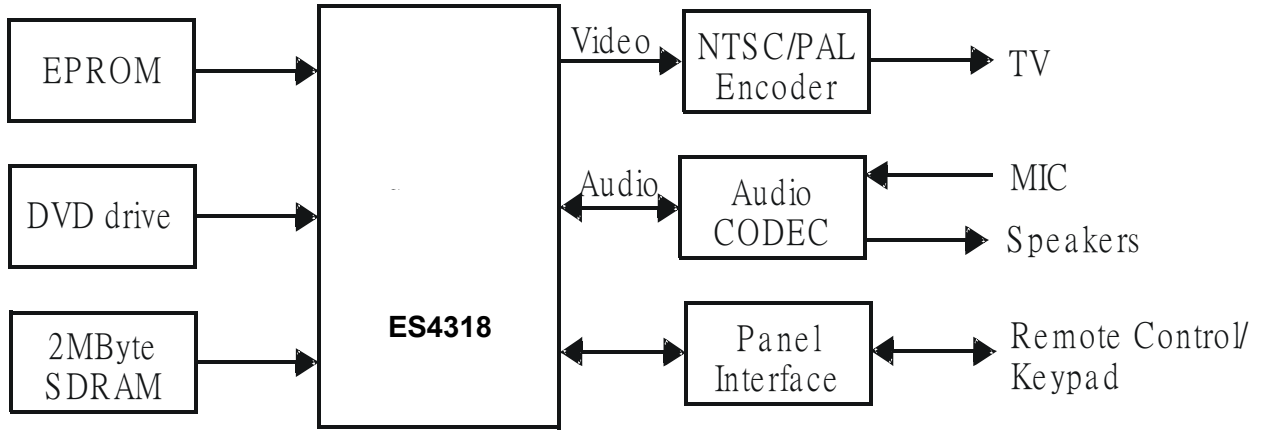
SWAN ES4318 PIN DESCRIPTION

Name	Number	I/O	Definition
VCC	1, 9, 18, 27, 35, 44, 51, 59, 68, 75, 83, 92, 99, 104, 111, 121, 130, 139, 148, 157, 164, 172, 183, 193, 201	I	3.6 V power supply.
LA[21:0]	23:19,16:10,7:2,207:204	O	Device address output.
VSS	8,17,26,34,43,52,60,67,76,84,91,98,103,112,120,129,138,147,156,163,171,177,184,192,200,208	I	Ground.
RESET#	24	I	Reset input, active low.

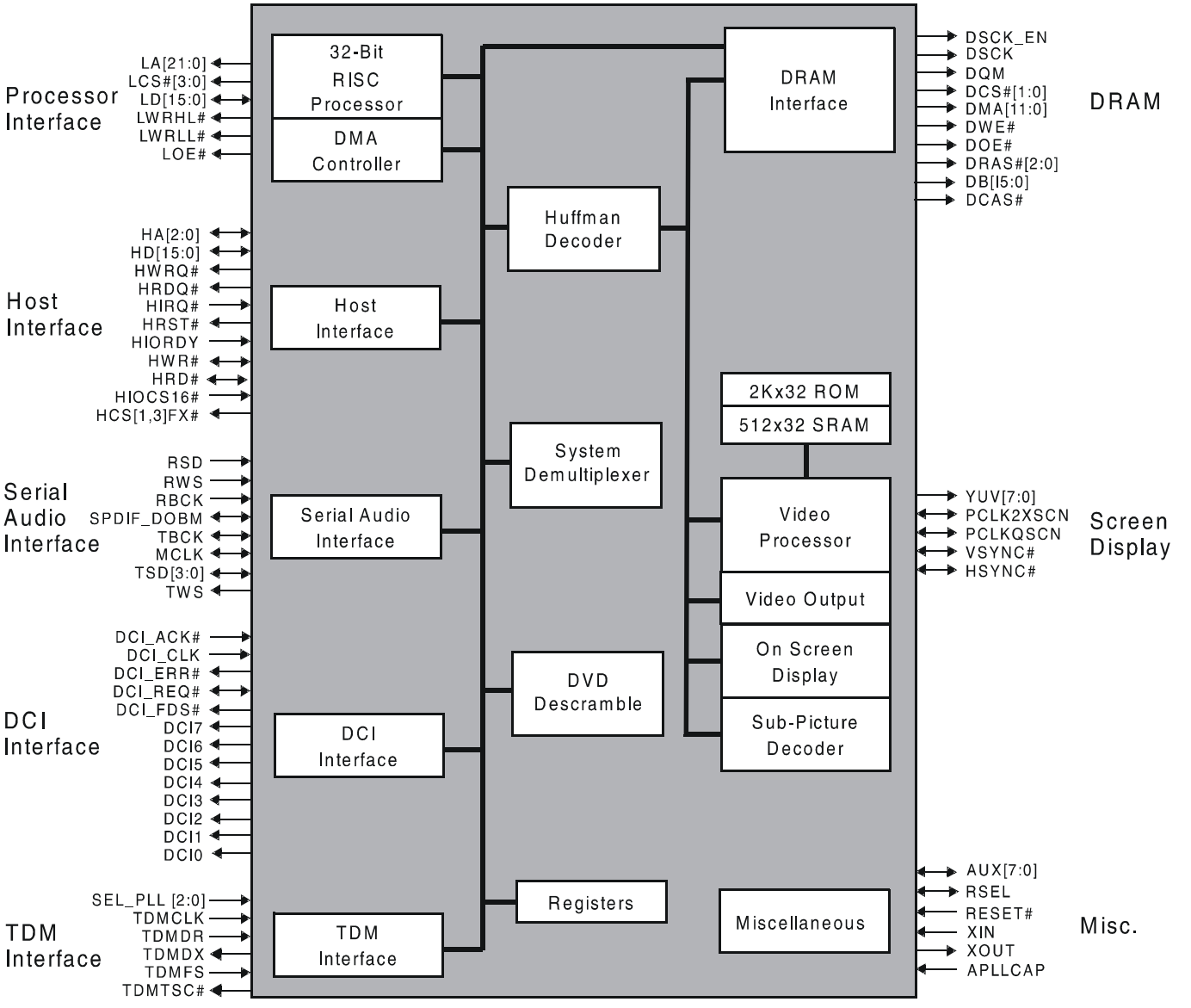
U1 ES4318 PIN DESCRIPTION

Name	Number	I/O	Definition
TDMDX	25	O	TDM transmit data.
RSEL		I	ROM Select RSEL Selection 0 8-bit ROM 1 16-bit ROM
TDMDR	28	I	TDM receive data.
TDMCLK	29	I	TDM clock input.
TDMFS	30	I	TDM frame synch.
TDMTSC#	31	O	TDM output enable, active low.
TWS	32	O	Audio transmit frame sync.
SEL_PLL1		I	Select PLL1.
TSD0	33	O	Audio transmit serial data port.
SEL_PLL0		I	Select PLL0. SEL_PLL2 SEL_PLL0 Clock Output 0 0 2.5 x DCLK 0 1 3 x DCLK 1 0 3.5 x DCLK 1 1 4 x DCLK
TSD1	36	O	
SEL_PLL2		I	Select PLL2. See the table for pin number 33.
TSD2	37	O	Audio transmit serial data port.
TSD3	38	O	Audio transmit serial data port.
MCLK	39	I/O	Audio master clock for audio DAC.
TBCK	40	I/O	Audio transmit bit clock.
SPDIF_DOBM	41	O	S/PDIF (IEC958) Format Output.
RSD	45	I	Audio receive serial data.
RWS	46	I	Audio receive frame synch.
RBCK	47	I	Audio receive bit clock.
APLLCAP	48	I	Analog PLL Capacitor.
XIN	49	I	Crystal input.
XOUT	50	O	Crystal output.
DMA[11:0]	66:61,58:53	O	DRAM address bus.
DCAS#	69	O	Column address strobe, active low.
DOE#	70	O	Output enable, active low.
DSCK_EN		I	Clock Enable, active low.
DWE#	71	O	DRAM write enable, active low.
DRAS[2:0]#	74:72	O	Row address strobe, active low.
DB[15:0]	96:93,90:85,82:77	I/O	DRAM data bus.
DCS[1:0]#	97,100	O	SDRAM chip select [1:0], active low.
DQM	101	O	Data input/output mask.
DSCK	102	O	Clock to SDRAM.
DCLK	105	I	Clock Input (27 MHz)
YUV[7:0]	115:113,110:106	O	8-bit YUV output.
PCLK2XSCN	116	I/O	2X pixel clock.
PCLKQSCN	117	I/O	Pixel clock.
VSYNCH#	118	I/O	Vertical synch for screen video interface, programmable for rising or falling edge, active low.
HSYNCH#	119	I/O	Horizontal sync for screen video interface, programmable for rising or falling edge, active low.
HD[15:0]	141:140,137:131,128:122	O	Host data bus
HCS1FX#	152	O	Host select 1.
HCS3FX#	153	O	Host select 3.
HIOCS16#	151	I	Device 16-bit data transfer.
HA[2:0]	158, 155:154	I/O	Host address bus.
VPP	159	I	5 V power supply.
HWR#/DCI_ACK#	149	I,O	Host write/DCI Interface Acknowledge Signal, active low.
HRD#/DCI_CLK	150	O,O	Host read/DCI Interface Clock.
HD[15:0]	141:140,137:131,128:122	I/O	Host data bus.
HWRQ#	142	O	Host write request.
HRDQ#	143	O	Host read request.
HIRQ	144	I/O	Host interrupt.
HRST#	145	O	Host reset.
HIORDY	146	I	Host I/O ready.
AUX[7:0]	169:165,162:160	I/O	Auxiliary ports.
LOE#	170	O	Device output enable, active low.
LCS[3:0]#	176:173	O	Chip select [3:0], active low.
LD[15:0]	197:194, 191:185, 182:178	I/O	Device data bus.
LWRLL#	198	O	Device write enable, active low.
LWRHL#	199	O	Device write enable, active low.
NC	37,38,42,203:202		No Connect pins. Leave open.

U1 ES4318 SYSTEM BLOCK DIAGRAM

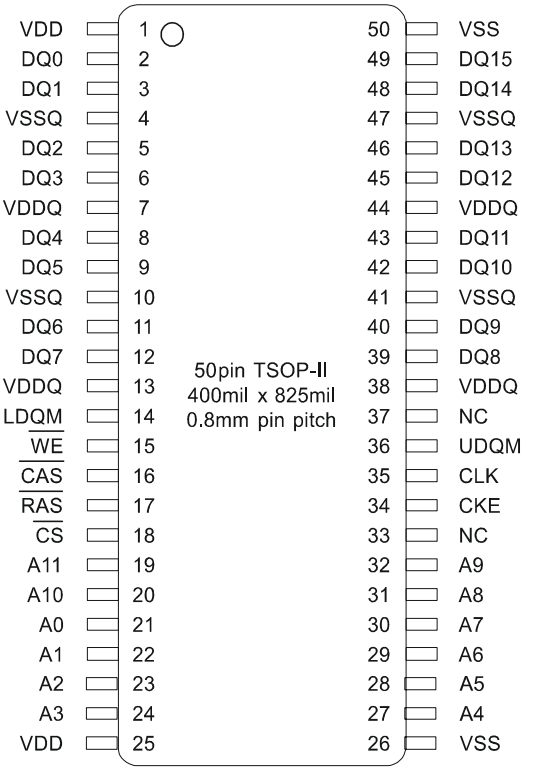


U1 ES4318 FUNCTIONAL DESCRIPTION



9 - 2. U2/U3 HY57V161610D

PIN CONFIGURATIONS



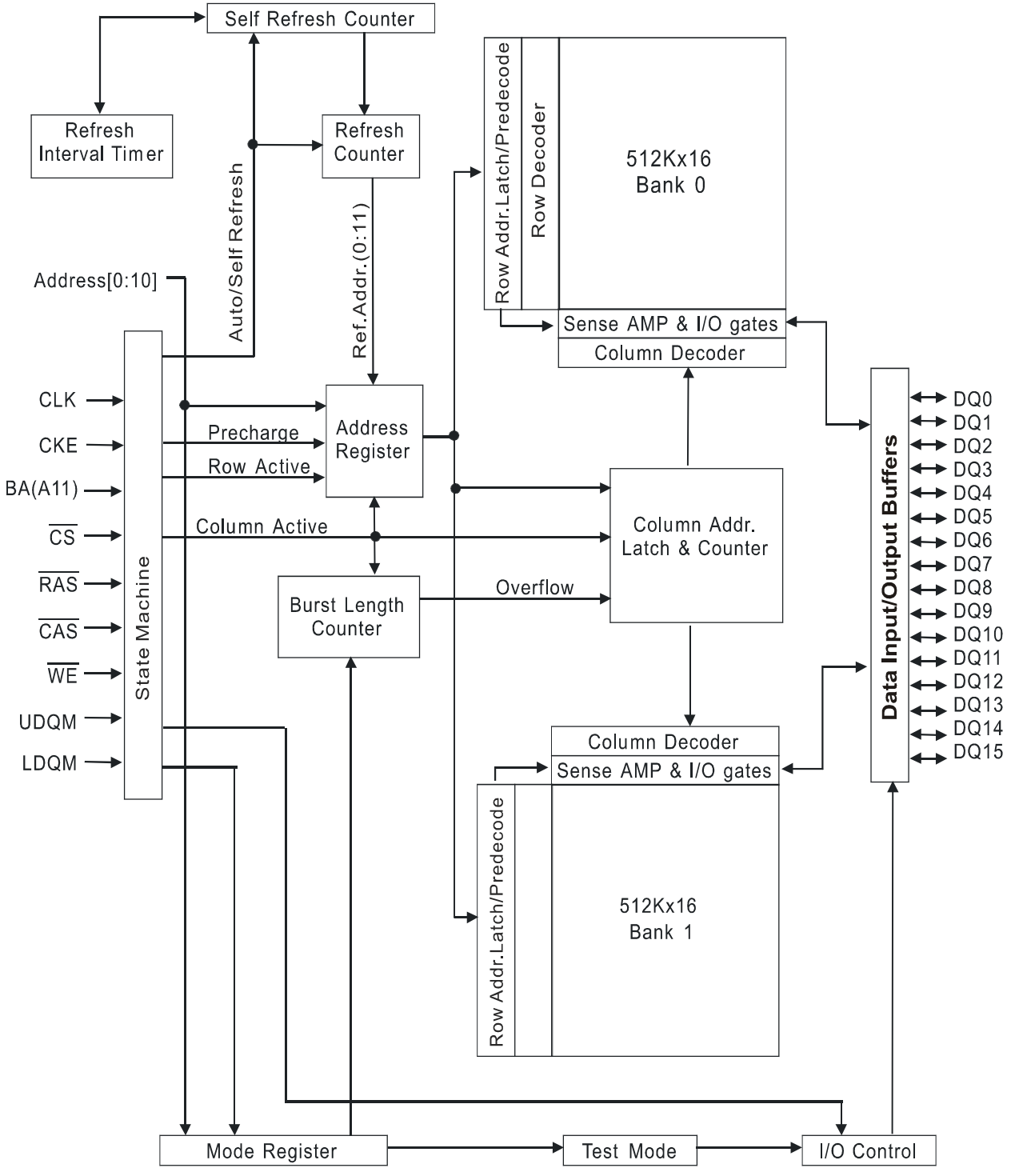
PIN DESCRIPTION

PIN	PIN NAME	DESCRIPTION
CLK	Clock	The system clock input. All other inputs are referenced to the SDRAM on the rising edge of CLK.
CKE	Clock Enable	Controls internal clock signal and when deactivated, the SDRAM will be one of the states among power down, suspend or self refresh.
$\overline{CS}$	Chip Select	Command input enable or mask except CLK, CKE and DQM
BA	Bank Address	Select either one of banks during both $\overline{RAS}$ and $\overline{CAS}$ activity.
A0 ~ A10	Address	Row Address : RA0 ~ RA10, Column Address : CA0 ~ CA7 Auto-precharge flag : A10
$\overline{RAS}$, $\overline{CAS}$, $\overline{WE}$	Row Address Strobe, Column Address Strobe, Write Enable	$\overline{RAS}$, $\overline{CAS}$ and $\overline{WE}$ define the operation. Refer function truth table for details
LDQM, UDQM	Data Input/Output Mask	DQM control output buffer in read mode and mask input data in write mode
DQ0 ~ DQ15	Data Input/Output	Multiplexed data input / output pin
VDD/VSS	Power Supply/Ground	Power supply for internal circuit and input buffer
VDDQ/VSSQ	Data Output Power/Ground	Power supply for DQ
NC	No Connection	No connection

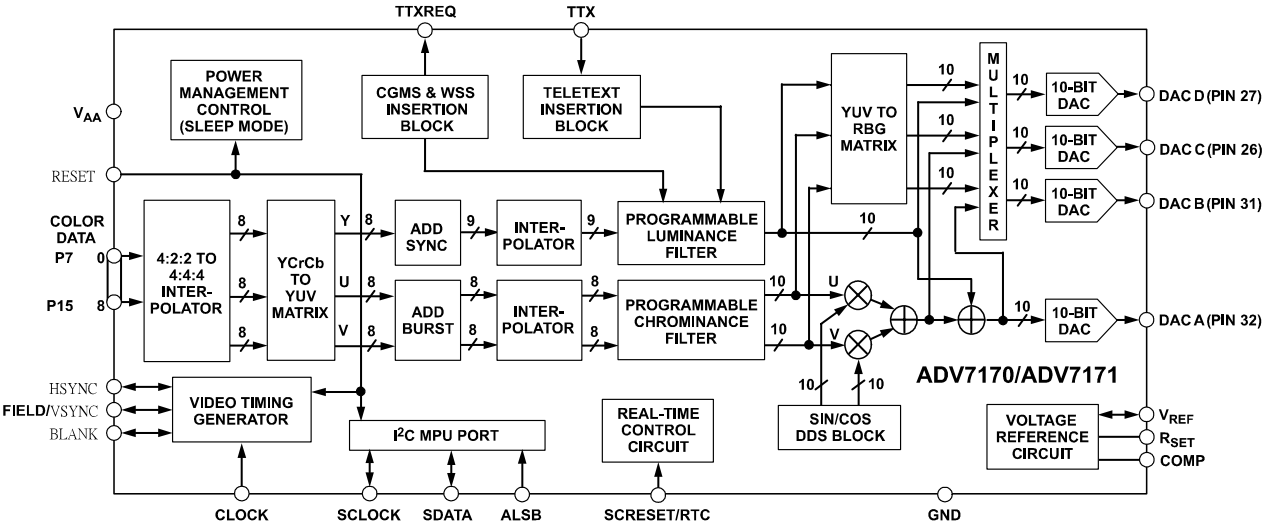
U2/U3 HY57V161610D

FUNCTIONAL BLOCK DIAGRAM

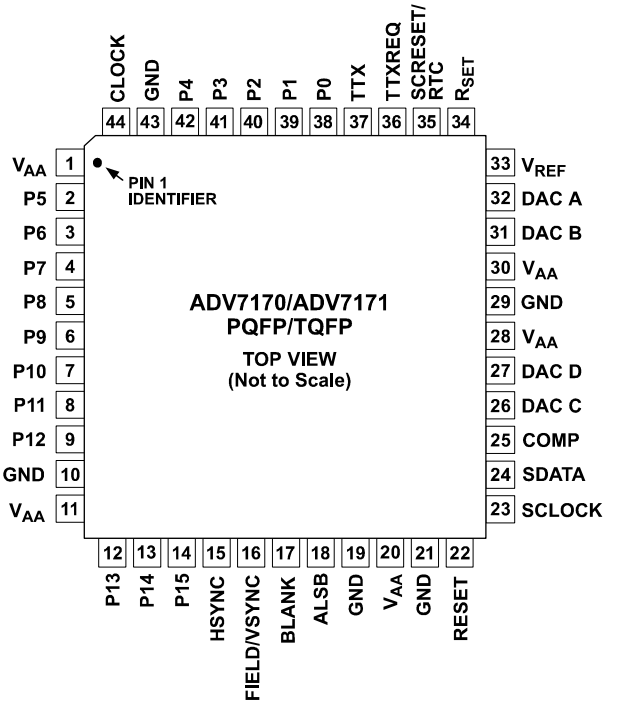
1Mx16Synchronous DRAM



9 - 3. U11 ADV7170 FUNCTIONAL BLOCK DIAGRAM



ADV7170 PIN CONFIGURATIONS



U11 ADV7170 PIN FUNCTION DESCRIPTIONS

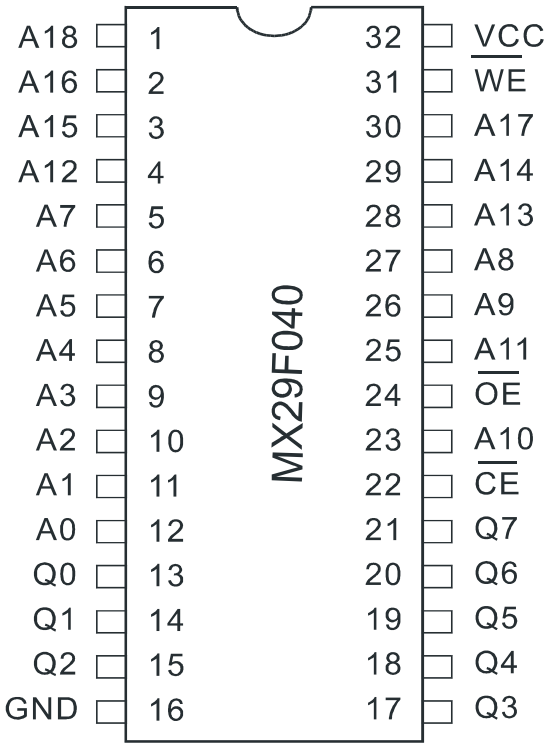
PIN FUNCTION DESCRIPTIONS

Mnemonic	Input/ Output	Function
P15–P0	I	8-Bit 4:2:2 Multiplexed YCrCb Pixel Port (P7–P0) or 16-Bit YCrCb Pixel Port (P15–P0). P0 represents the LSB.
CLOCK	I	TTL Clock Input. Requires a stable 27 MHz reference Clock for standard operation. Alternatively, a 24.52 MHz (NTSC) or 29.5 MHz (PAL) can be used for square pixel operation.
$\overline{\text{HSYNC}}$	I/O	$\overline{\text{HSYNC}}$ (Modes 1 and 2) Control Signal. This pin may be configured to output (Master Mode) or accept (Slave Mode) Sync signals.
FIELD/$\overline{\text{VSYNC}}$	I/O	Dual Function FIELD (Mode 1) and $\overline{\text{VSYNC}}$ (Mode 2) Control Signal. This pin may be configured to output (Master Mode) or accept (Slave Mode) these control signals.
$\overline{\text{BLANK}}$	I/O	Video Blanking Control Signal. The pixel inputs are ignored when this is Logic Level "0." This signal is optional.
SCRESET/RTC	I	This pin can be configured as an input by setting MR22 and MR21 of Mode Register 2. It can be configured as a subcarrier reset pin, in which case a high-to-low transition on this pin will reset the subcarrier to Field 0. Alternatively, it may be configured as a Real-Time Control (RTC) input.
V_{REF}	I/O	Voltage Reference Input for DACs or Voltage Reference Output (1.235 V).
R_{SET}	I	A 150 Ω resistor connected from this pin to GND is used to control full-scale amplitudes of the video signals.
COMP	O	Compensation Pin. Connect a 0.1 µF Capacitor from COMP to V_{AA}. For Optimum Dynamic Performance in low power mode, the value of the COMP capacitor can be lowered to as low as 2.2 nF.
DAC A	O	PAL/NTSC Composite Video Output. Full-Scale Output is 180 IRE (1286 mV) for NTSC and 1300 mV for PAL.
DAC C	O	RED/S-Video C/V Analog Output.
DAC D	O	GREEN/S-Video Y/Y Analog Output
DAC B	O	BLUE/Composite/U Analog Output.
SCLOCK	I	MPU Port Serial Interface Clock Input.
SDATA	I/O	MPU Port Serial Data Input/Output.
ALSB	I	TTL Address Input. This signal set up the LSB of the MPU address.
$\overline{\text{RESET}}$	I	The input resets the on chip timing generator and sets the ADV7170/ADV7171 into default mode. This is NTSC operation, Timing Slave Mode 0, 8 Bit Operation, 2 × Composite and S Video out and DAC B powered ON and DAC D powered OFF.
TTX/V_{AA}	I	Teletext Data/Defaults to V_{AA} when Teletext not Selected (enables backward compatibility to ADV7175/ADV7176).
TTXREQ/GND	O	Teletext Data Request Signal/ Defaults to GND when Teletext not Selected (enables backward compatibility to ADV7175/ADV7176).
V_{AA}	P	Power Supply (+3 V to +5 V).
GND	G	Ground Pin.

9 - 4. U4 MX29F040

PIN CONFIGURATIONS

32 PDIP



PIN DESCRIPTION

SYMBOL	PIN NAME
A0~A18	Address Input
Q0~Q7	Data Input/Output
$\overline{CE}$	Chip Enable Input
$\overline{WE}$	Write Enable Input
$\overline{OE}$	Output Enable Input
GND	Ground Pin
VCC	+5.0V Single Power Supply

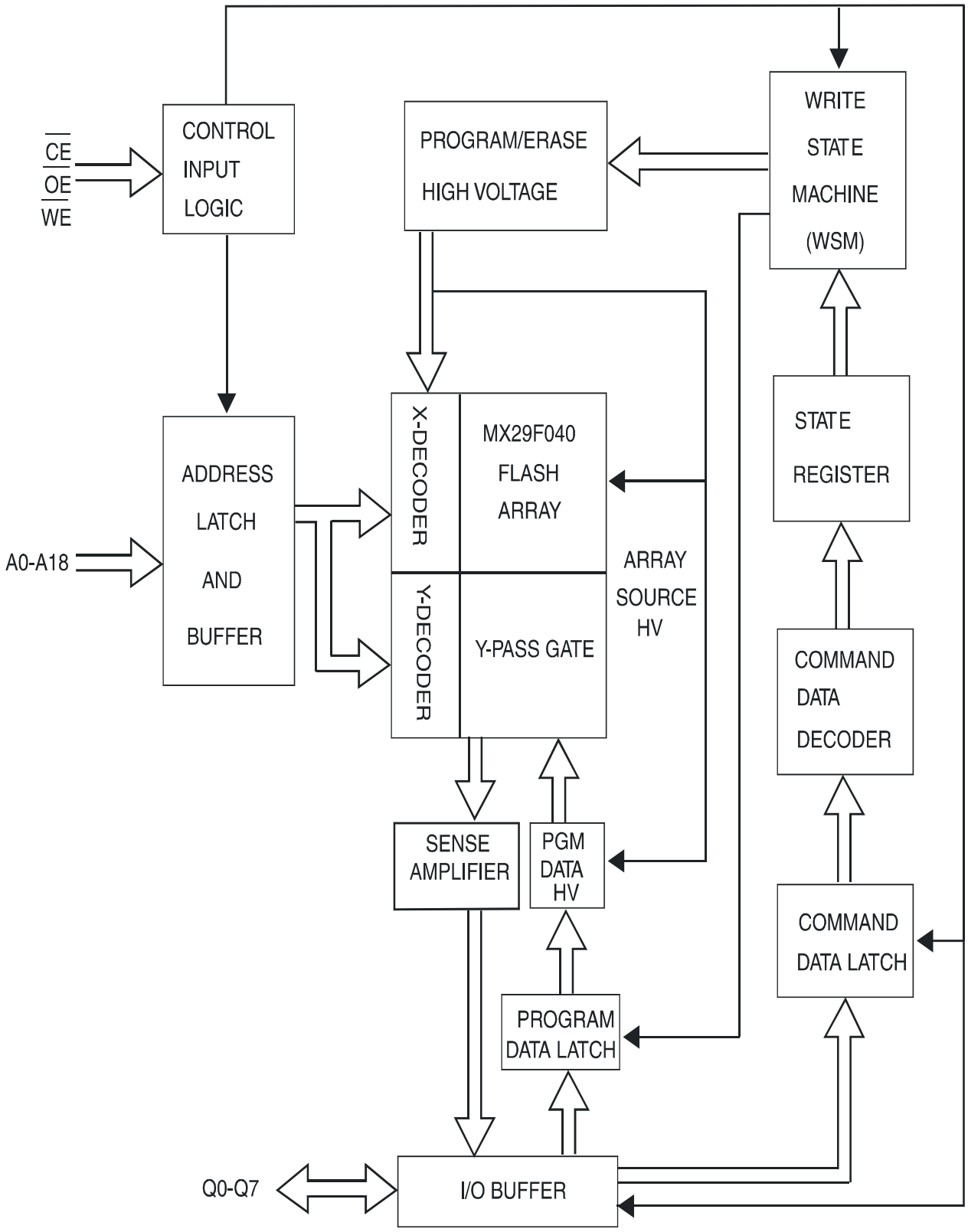
SECTOR STRUCTURE

MX29F040 SECTOR ADDRESS TABLE

Sector	A18	A17	A16	Address Range
SA0	0	0	0	00000h-0FFFFh
SA1	0	0	1	10000h-1FFFFh
SA2	0	1	0	20000h-2FFFFh
SA3	0	1	1	30000h-3FFFFh
SA4	1	0	0	40000h-4FFFFh
SA5	1	0	1	50000h-5FFFFh
SA6	1	1	0	60000h-6FFFFh
SA7	1	1	1	70000h-7FFFFh

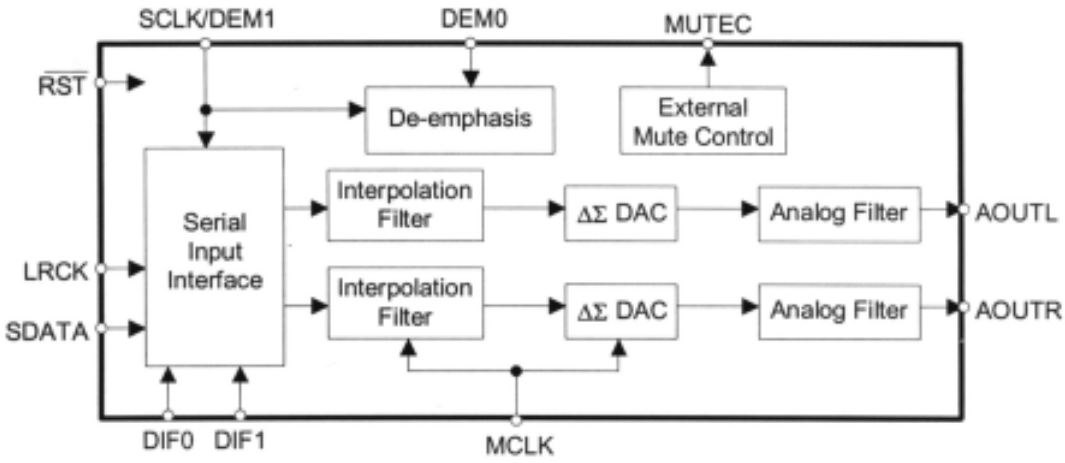
Note:All sectors are 64 Kbytes in size.

BLOCK DIAGRAM



9 - 5. U12 CS4340

24-Bit, 96 kHz Stereo DAC for Audio



4.0 PIN DESCRIPTION

Reset	**RST**	1	16	**MUTEC**	Mute Control
Serial Data	**SDATA**	2	15	**AOUTA**	Analog Output A
Serial Clock / De-emphasis	**SCLK/DEM1**	3	14	**VA**	Analog Power
Left/Right Clock	**LRCK**	4	13	**AGND**	Analog Ground
Master Clock	**MCLK**	5	12	**AOUTB**	Analog Output B
Digital Interface Format	**DIF1**	6	11	**REF_GND**	Reference Ground
Digital Interface Format	**DIF0**	7	10	**VQ**	Quiescent Voltage
De-emphasis	**DEM0**	8	9	**FILT+**	Positive Voltage Reference

Analog Power - VA

Pin 14, Input

Function:

Analog power supply. Typically 3 to 5VDC.

Analog Ground - AGND

Pin 13, Input

Function:

Analog ground reference.

Analog Output - AOUTA and AOUTB

Pins 12 and 15, Output

Function:

The full scale analog output level is specified in the Analog Characteristics specifications table.

Reference Ground - REF_GND

Pin 11, Input

Function:

Ground reference for the internal sampling circuits. Must be connected to analog ground.

Positive Voltage Reference - FILT+

Pin 9, Output

Function:

Positive reference for internal sampling circuits. External capacitors are required from FILT+ to analog ground, as shown in Figure 1. The recommended values will provide 60 dB of PSRR at 1 kHz and 40 dB of PSRR at 60 Hz. FILT+ is not intended to supply external current. FILT+ has a typical source impedence of 250 kΩ and any current drawn from this pin will alter device performance.

Quiescent Voltage - VQ

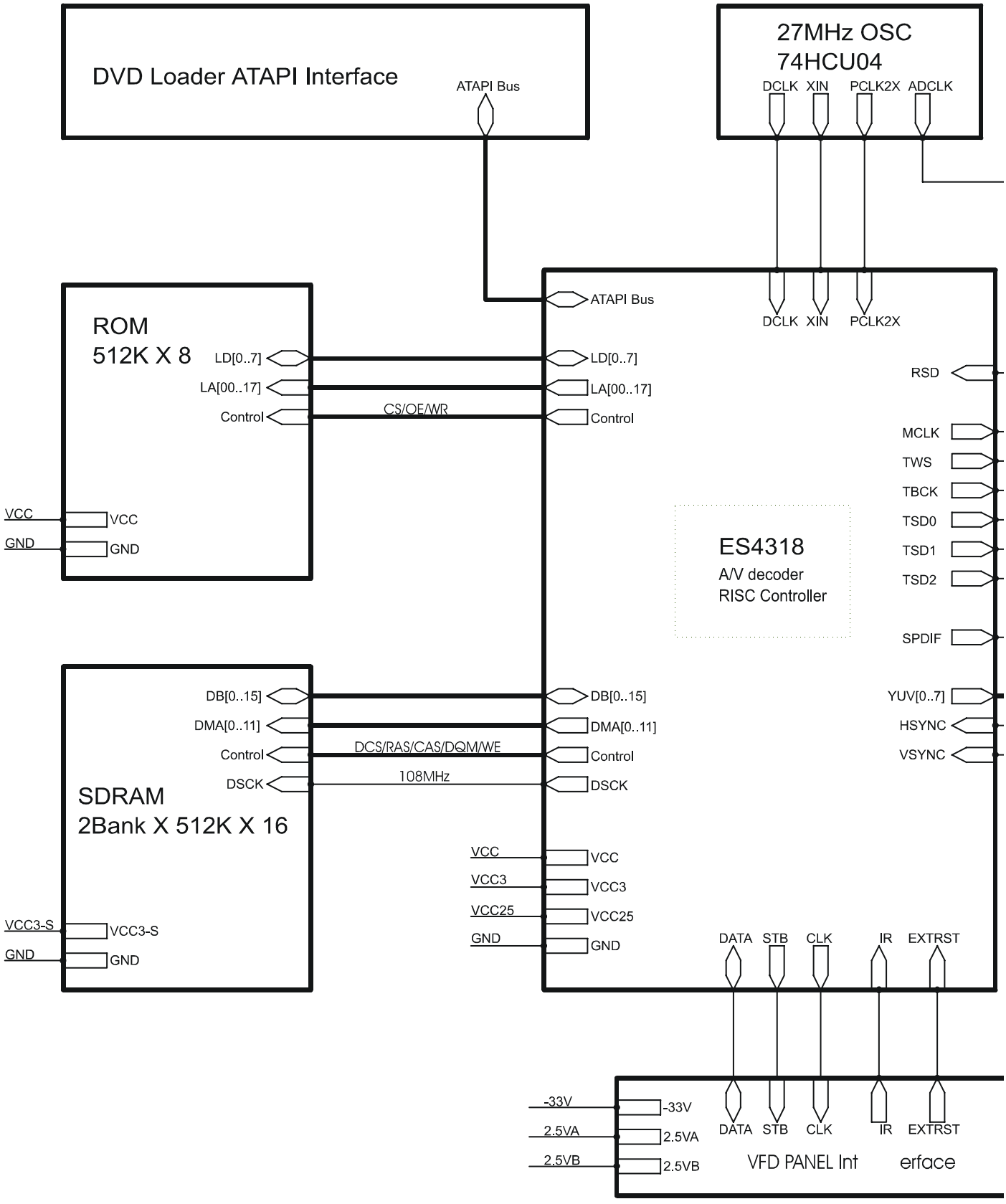
Pin 10, Output

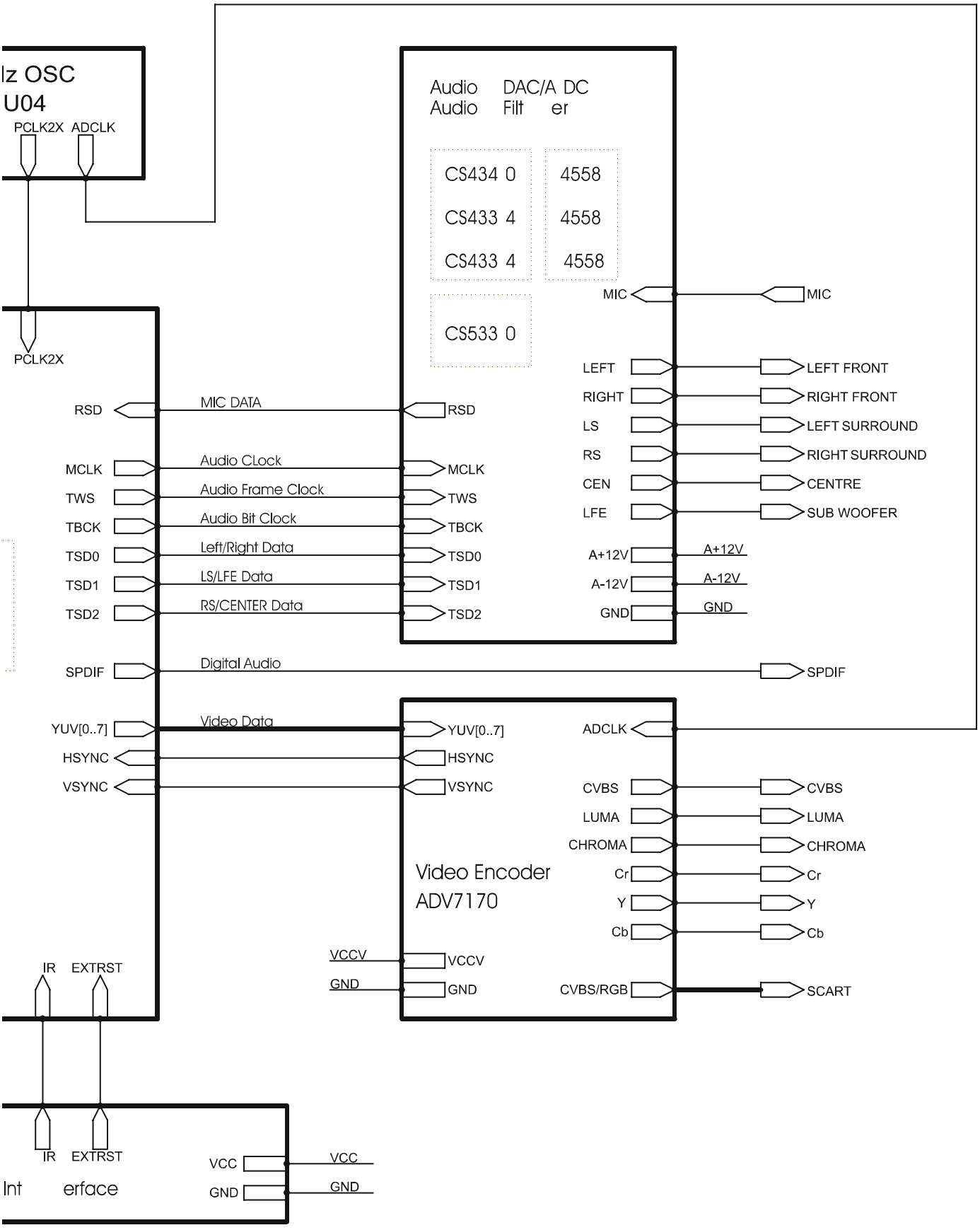
Function:

Filter connection for internal quiescent reference voltage, typically 50% of VA. Capacitors must be connected from VQ to analog ground, as shown in Figure 1. VQ is not intended to supply external current. VQ has a typical source impedence of 250 kΩ and any current drawn from this pin will alter device performance.

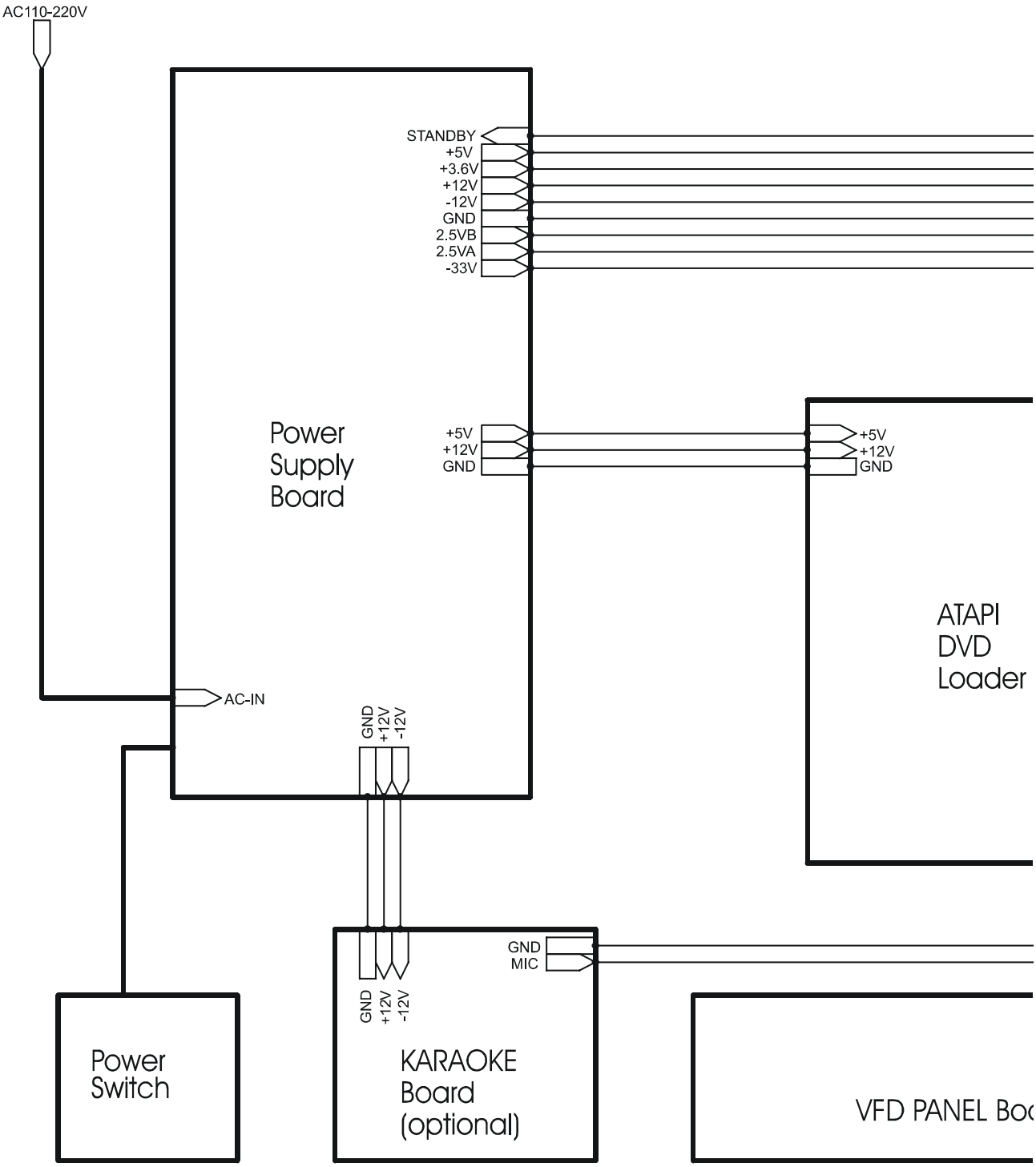
10. BLOCK CIRCUIT SCHEMATIC DIAGRAMS

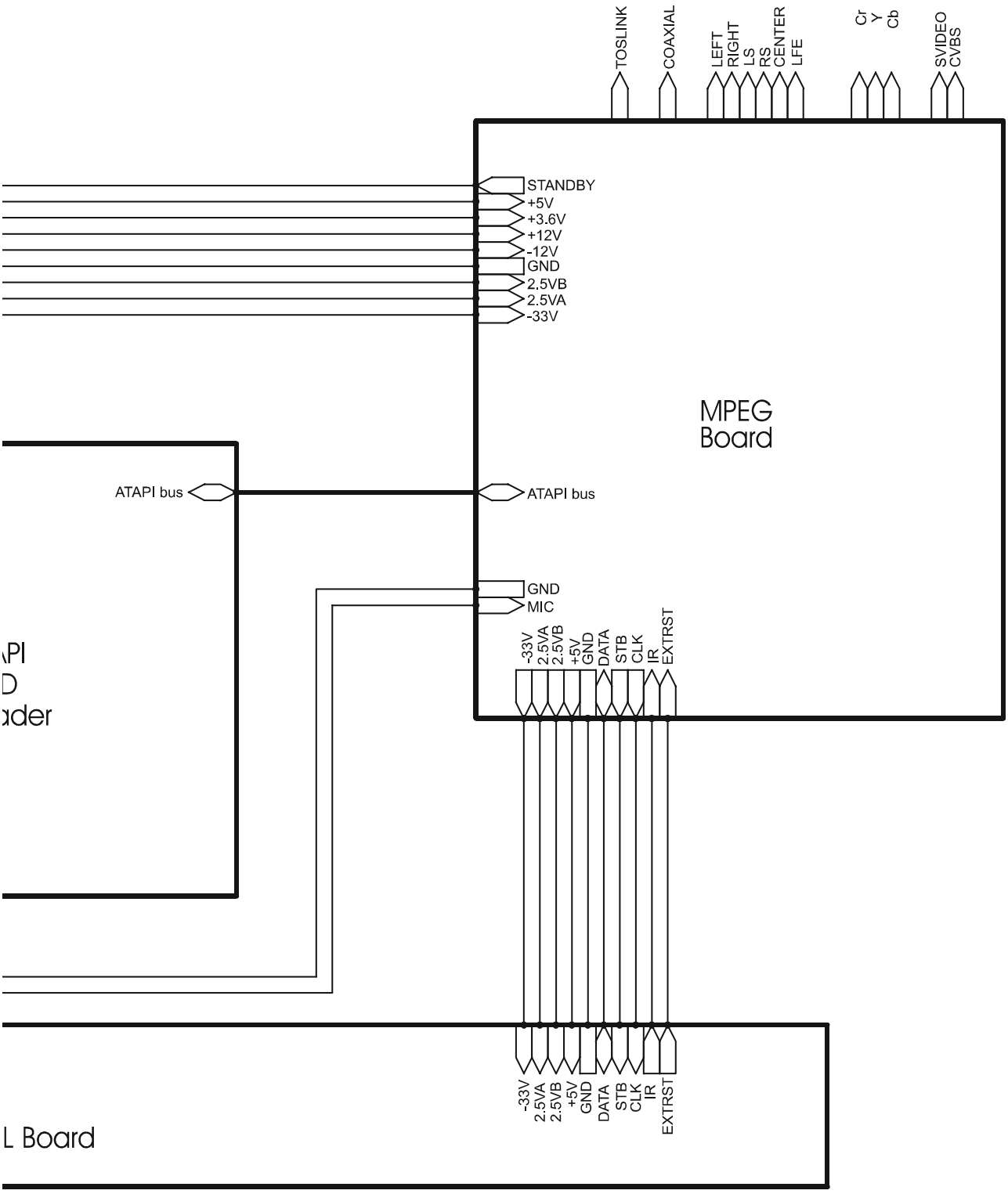
10-1. MPEG BLOCK DIAGRAM



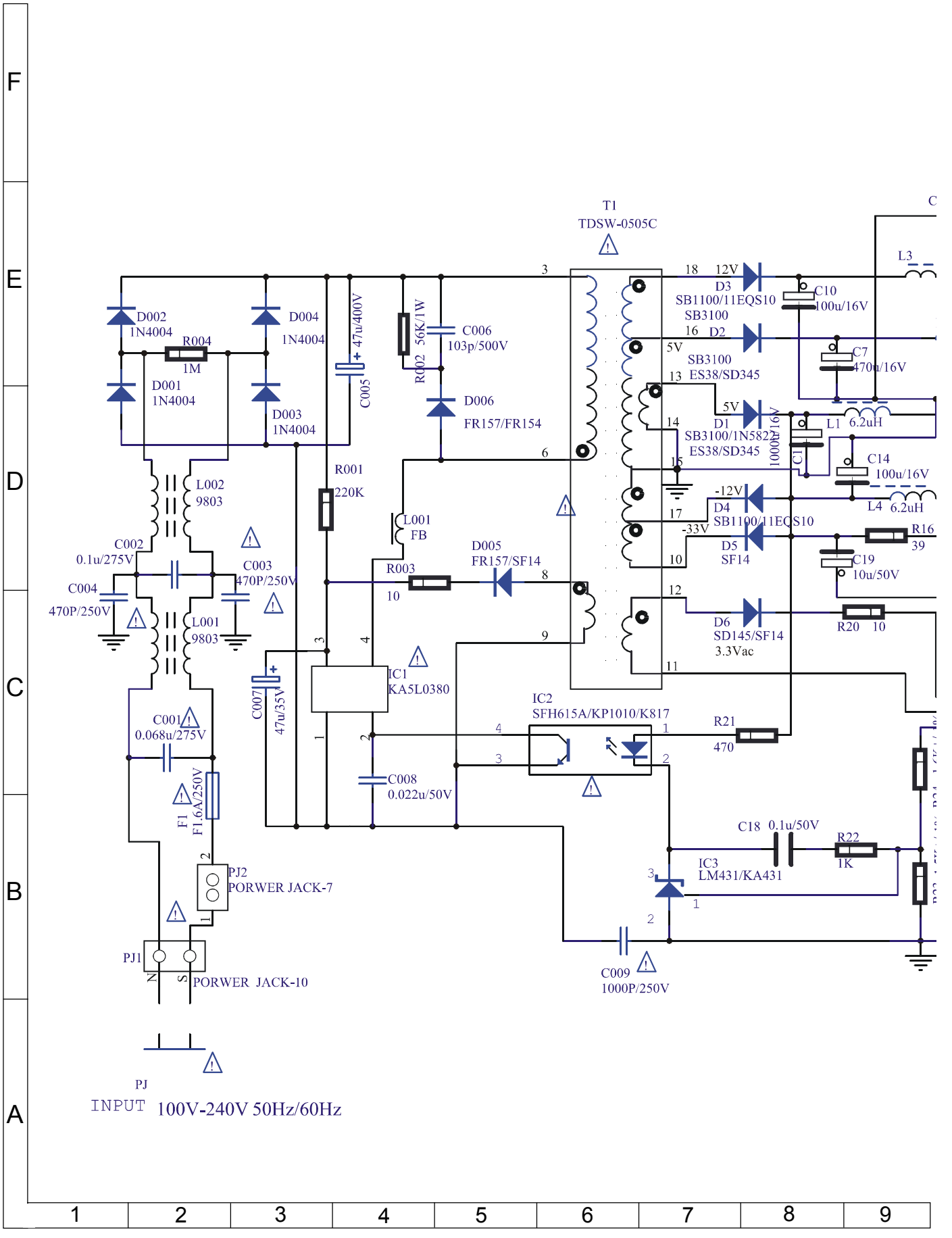

lz OSC
U04
PCLK2X ADCLK
PCLK2X
Audio DAC/A DC
Audio Filt er
CS434 0 4558
CS433 4 4558
CS433 4 4558
CS533 0
MIC
MIC
LEFT
RIGHT
LS
RS
CEN
LFE
LEFT FRONT
RIGHT FRONT
LEFT SURROUND
RIGHT SURROUND
CENTRE
SUB WOOFER
A+12V
A-12V
GND
A+12V
A-12V
GND
RSD
MIC DATA
RSD
MCLK
Audio CLock
MCLK
TWS
Audio Frame Clock
TWS
TBCK
Audio Bit Clock
TBCK
TSD0
Left/Right Data
TSD0
TSD1
LS/LFE Data
TSD1
TSD2
RS/CENTER Data
TSD2
SPDIF
Digital Audio
SPDIF
YUV[0..7]
HSYNC
VSYNC
Video Data
YUV[0..7]
HSYNC
VSYNC
ADCLK
CVBS
LUMA
CHROMA
Cr
Y
Cb
CVBS
LUMA
CHROMA
Cr
Y
Cb
Video Encoder
ADV7170
VCCV
GND
VCCV
GND
CVBS/RGB
SCART
IR EXTRST
IR EXTRST
Int erface
VCC
GND
VCC
GND

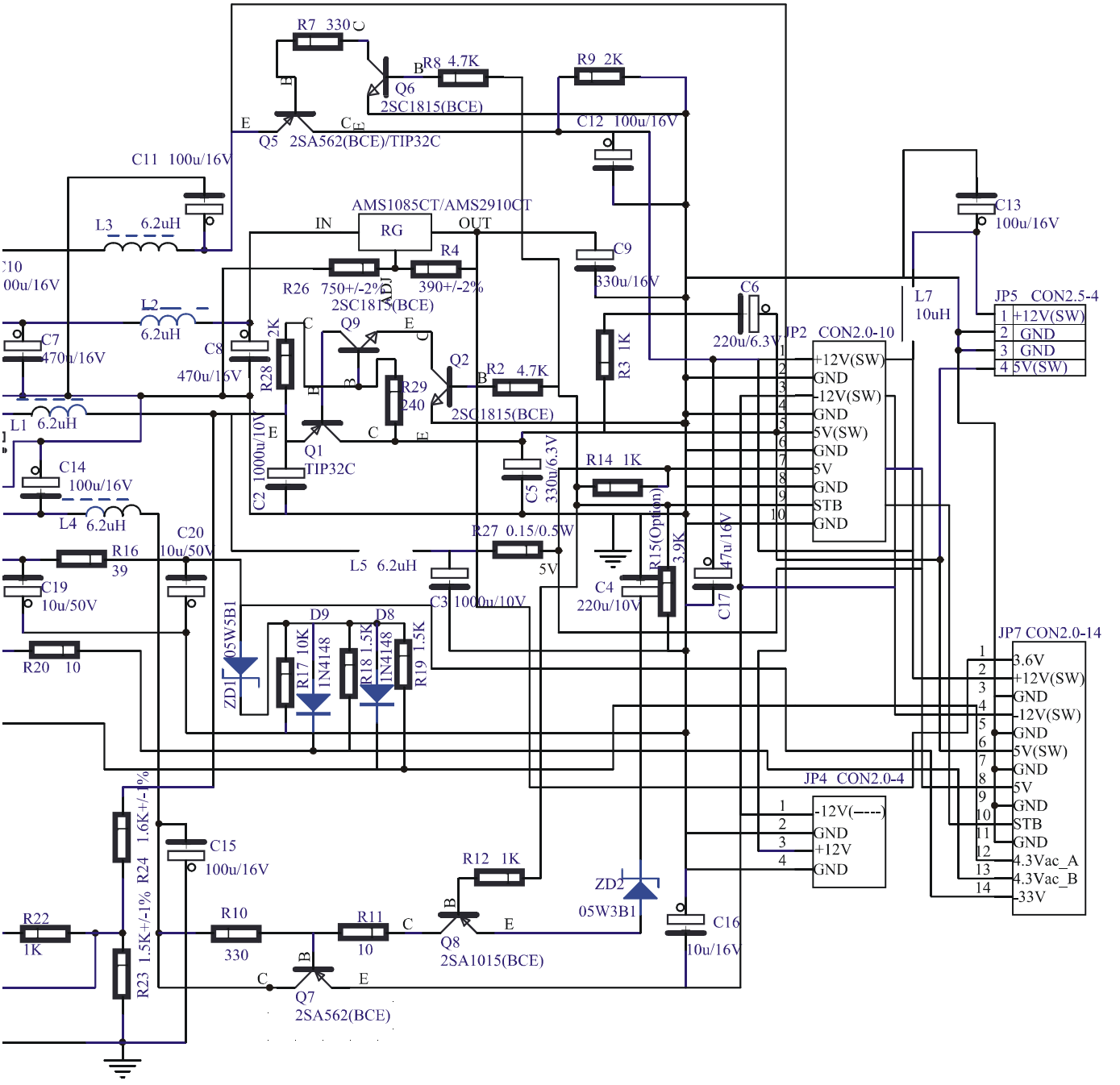
10-2. SYSTEM DIAGRAM




TOSLINK
COAXIAL
LEFT
RIGHT
LS
RS
CENTER
LFE
Cr
Y
Cb
SVIDEO
CVBS
STANDBY
+5V
+3.6V
+12V
-12V
GND
2.5VB
2.5VA
-33V
MPEG
Board
ATAPI bus
ATAPI bus
GND
MIC
-33V
2.5VA
2.5VB
+5V
GND
DATA
STB
CLK
IR
EXTRST
-33V
2.5VA
2.5VB
+5V
GND
DATA
STB
CLK
IR
EXTRST

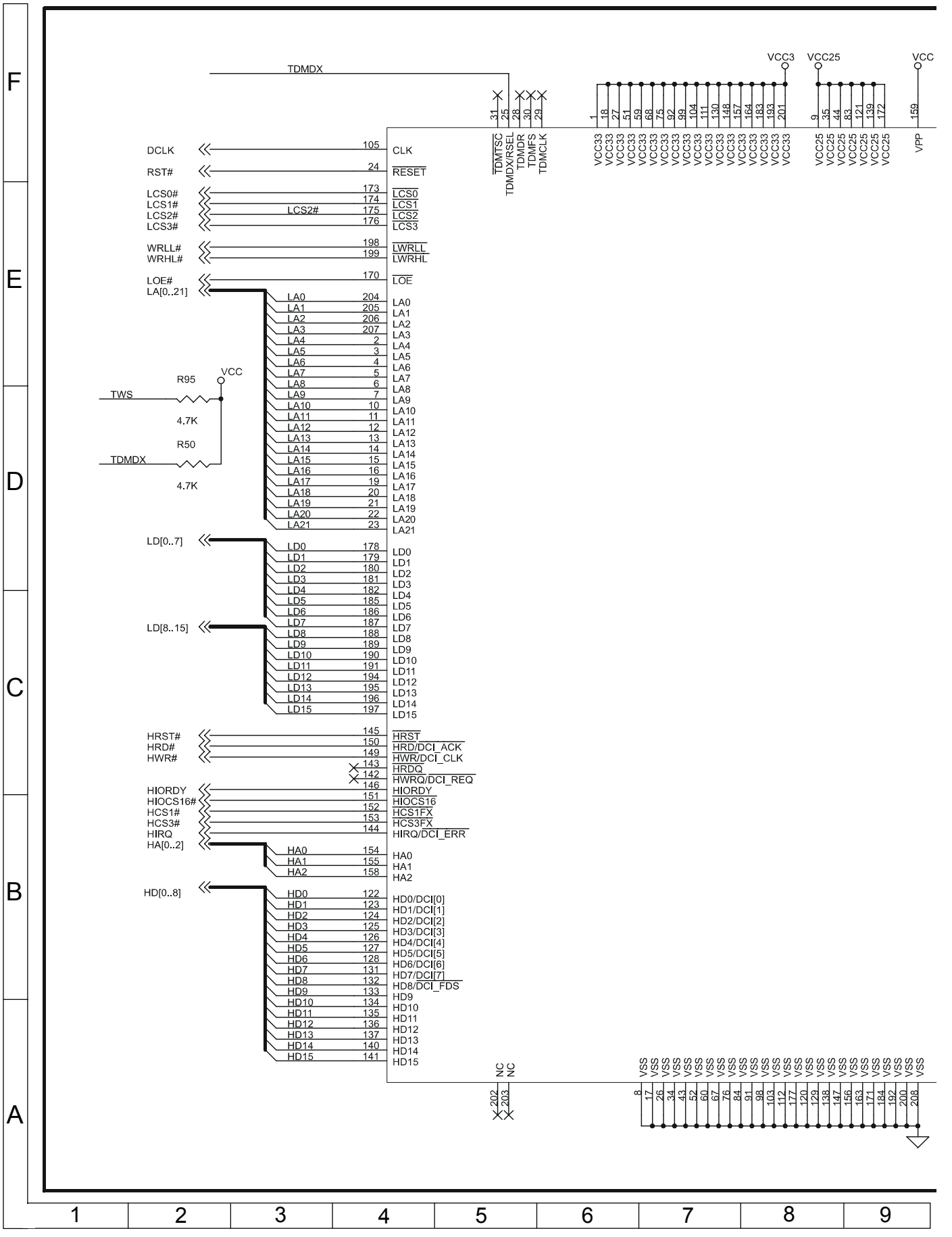
10-3. POWER SUPPLAY DIAGRAM

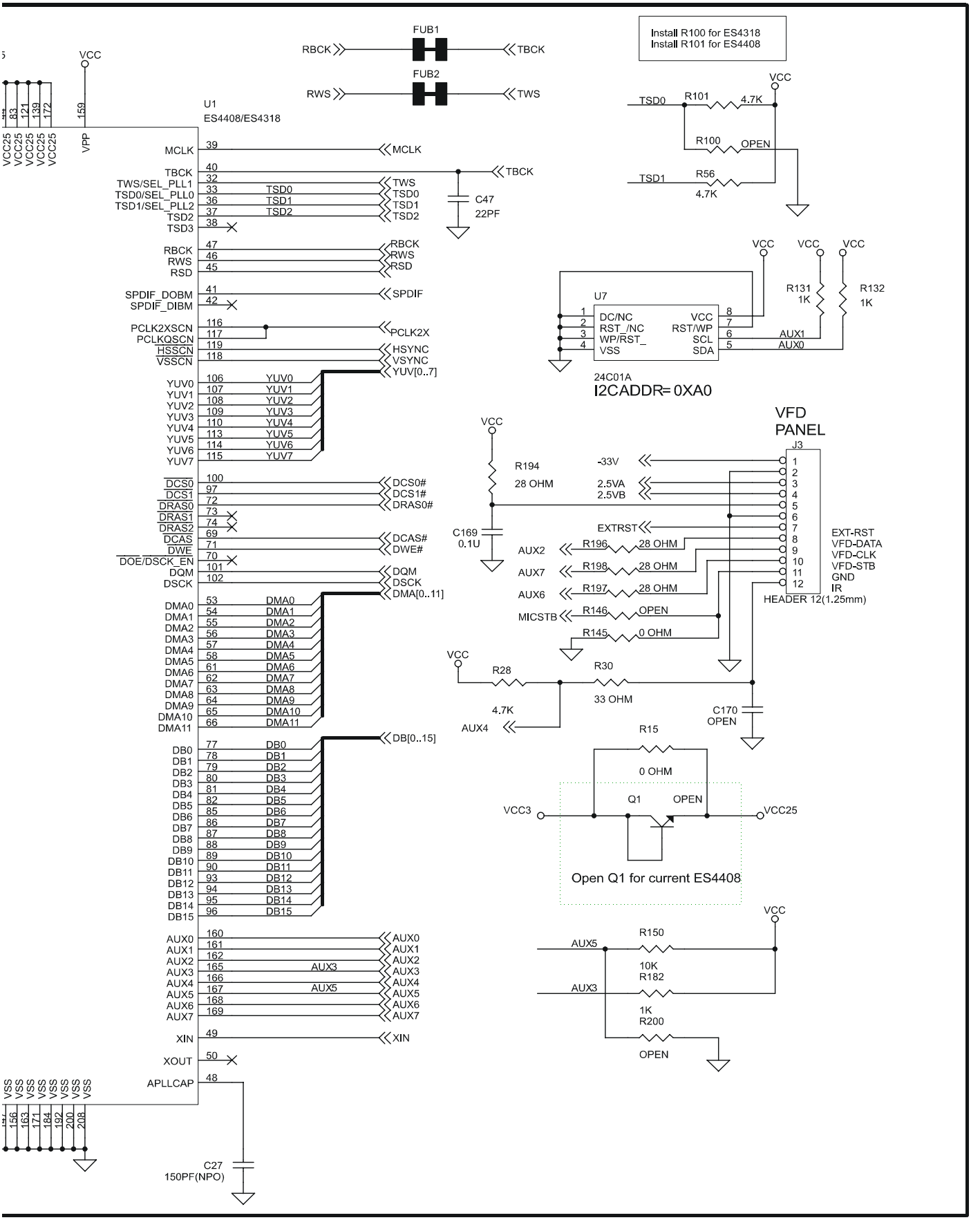




9	10	11	12	13	14	15	16	17

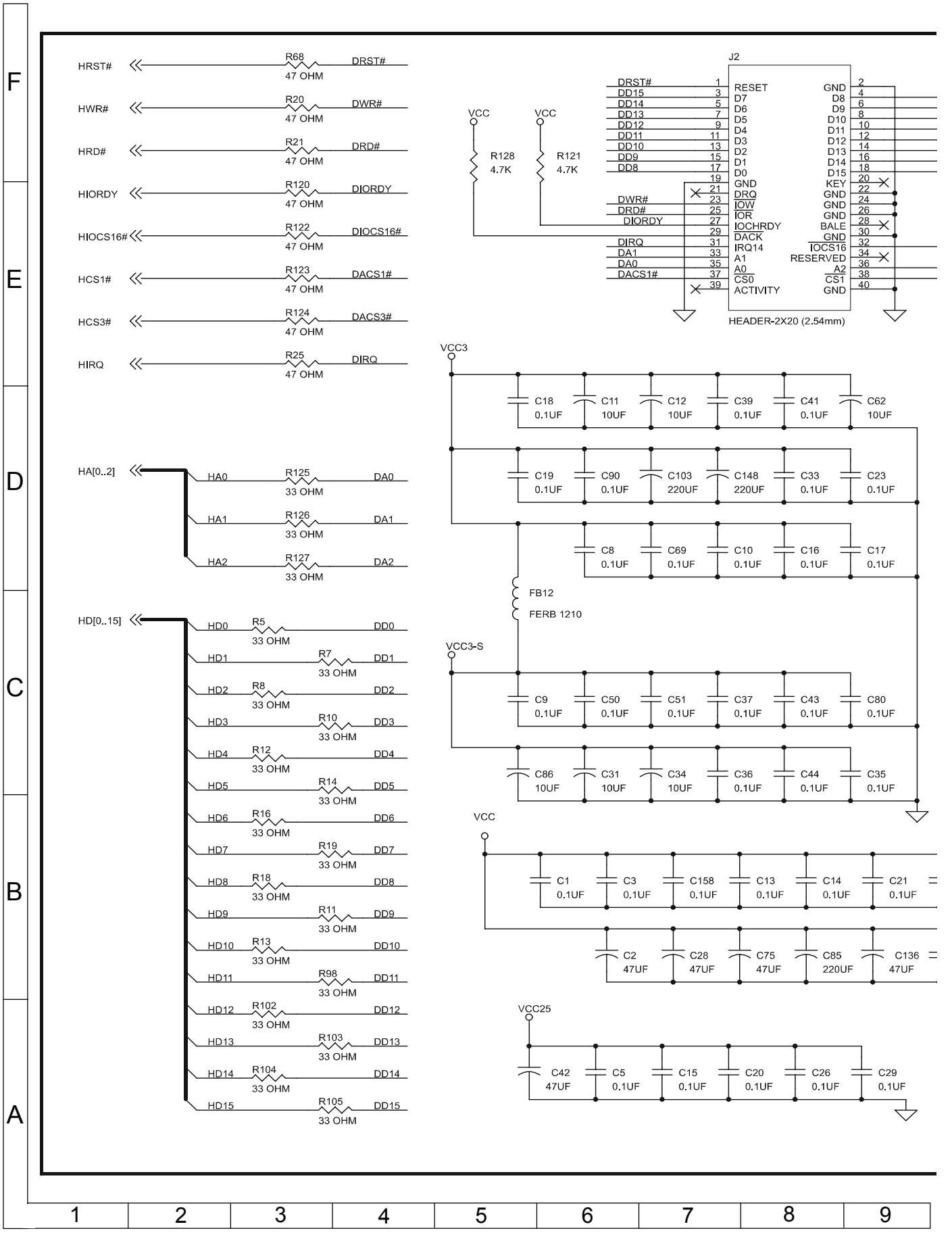
10-4. DVD PROCESSOR

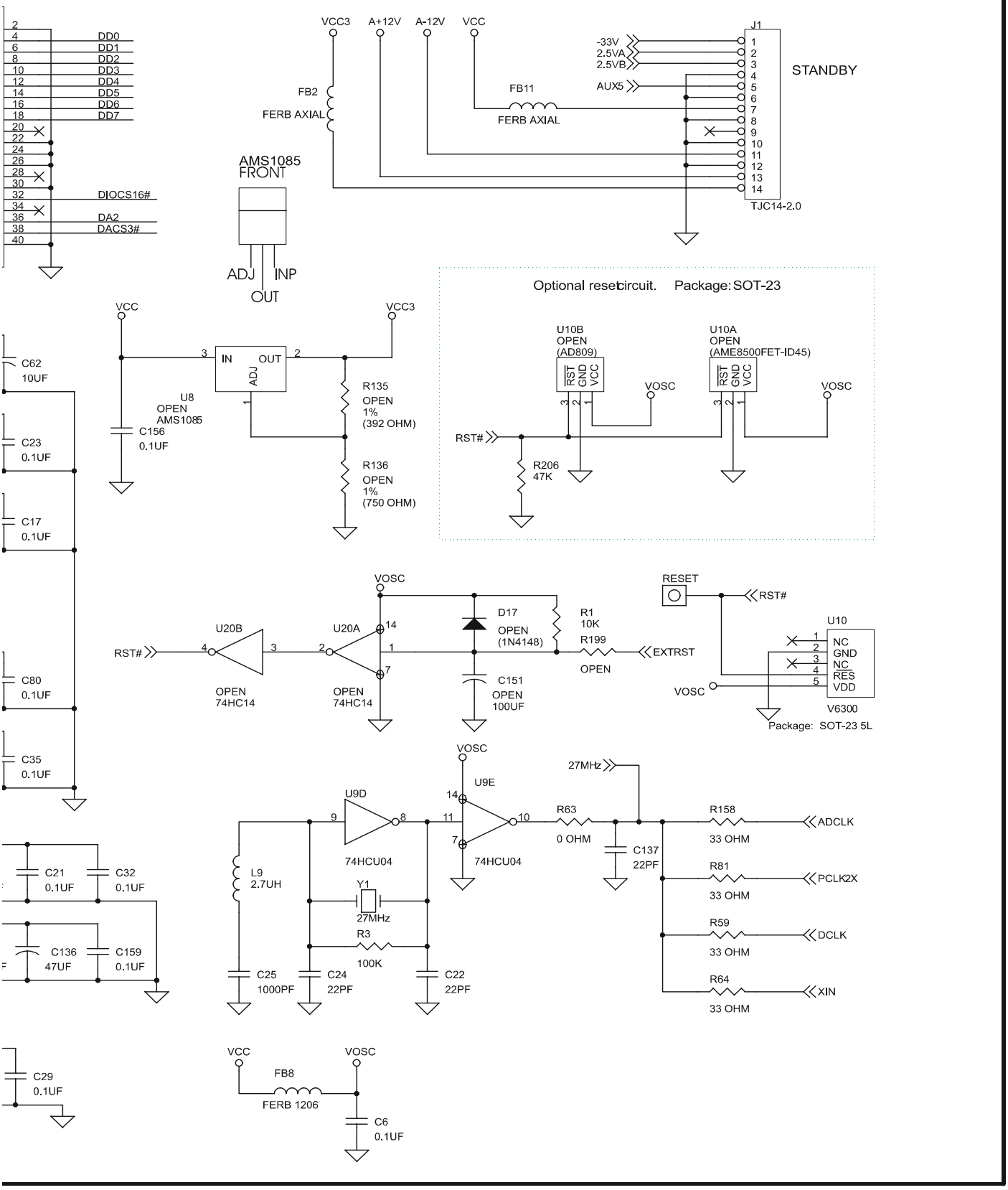




9	10	11	12	13	14	15	16	17

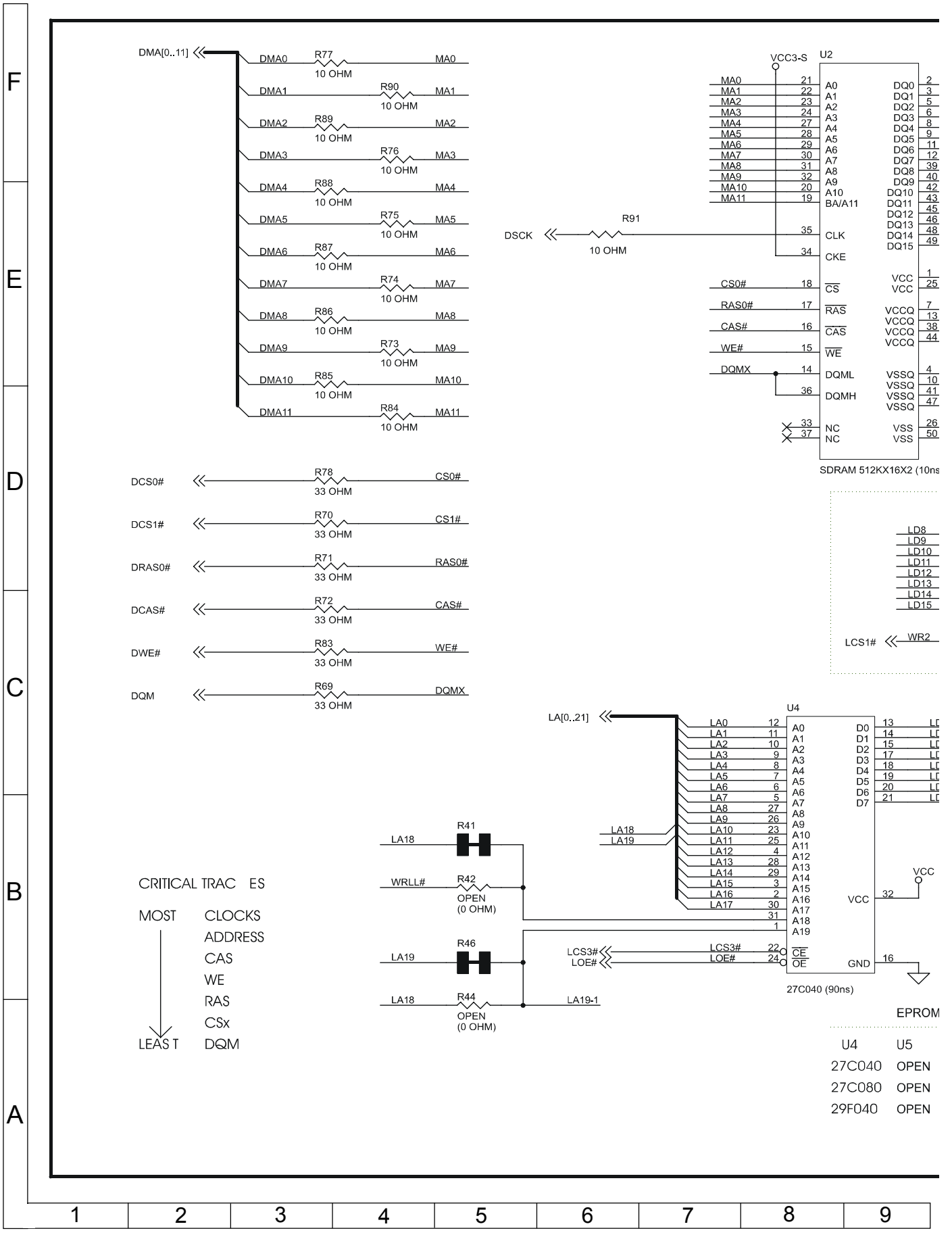
10-5. DVD ATAPI INTERFACE

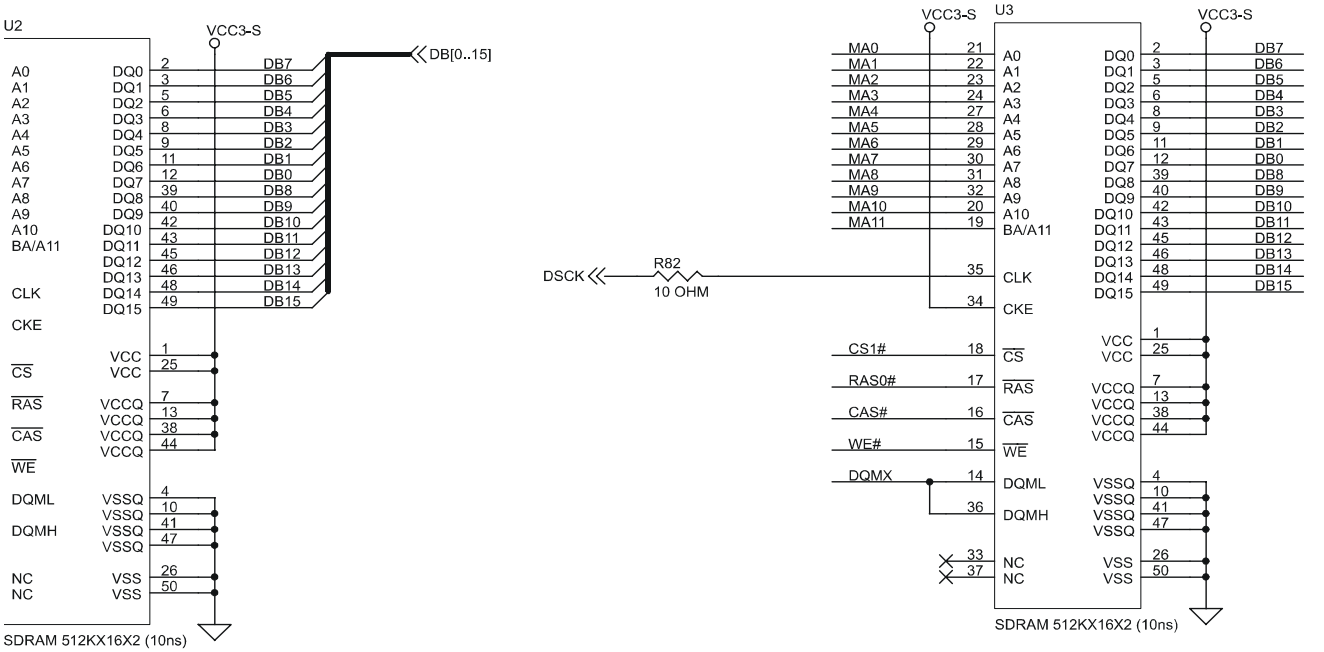


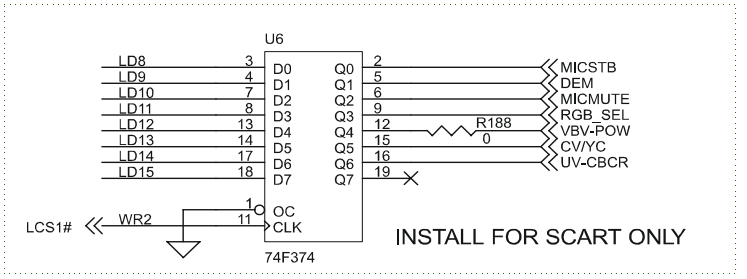


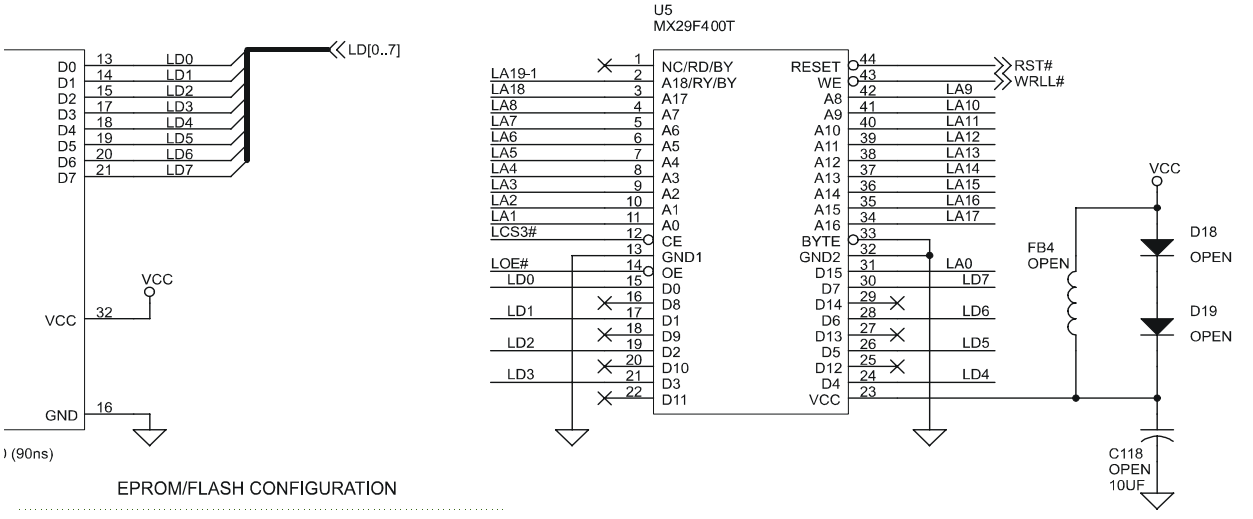
9	10	11	12	13	14	15	16	17

10-6. ROM.SDRAM I/O-MAP







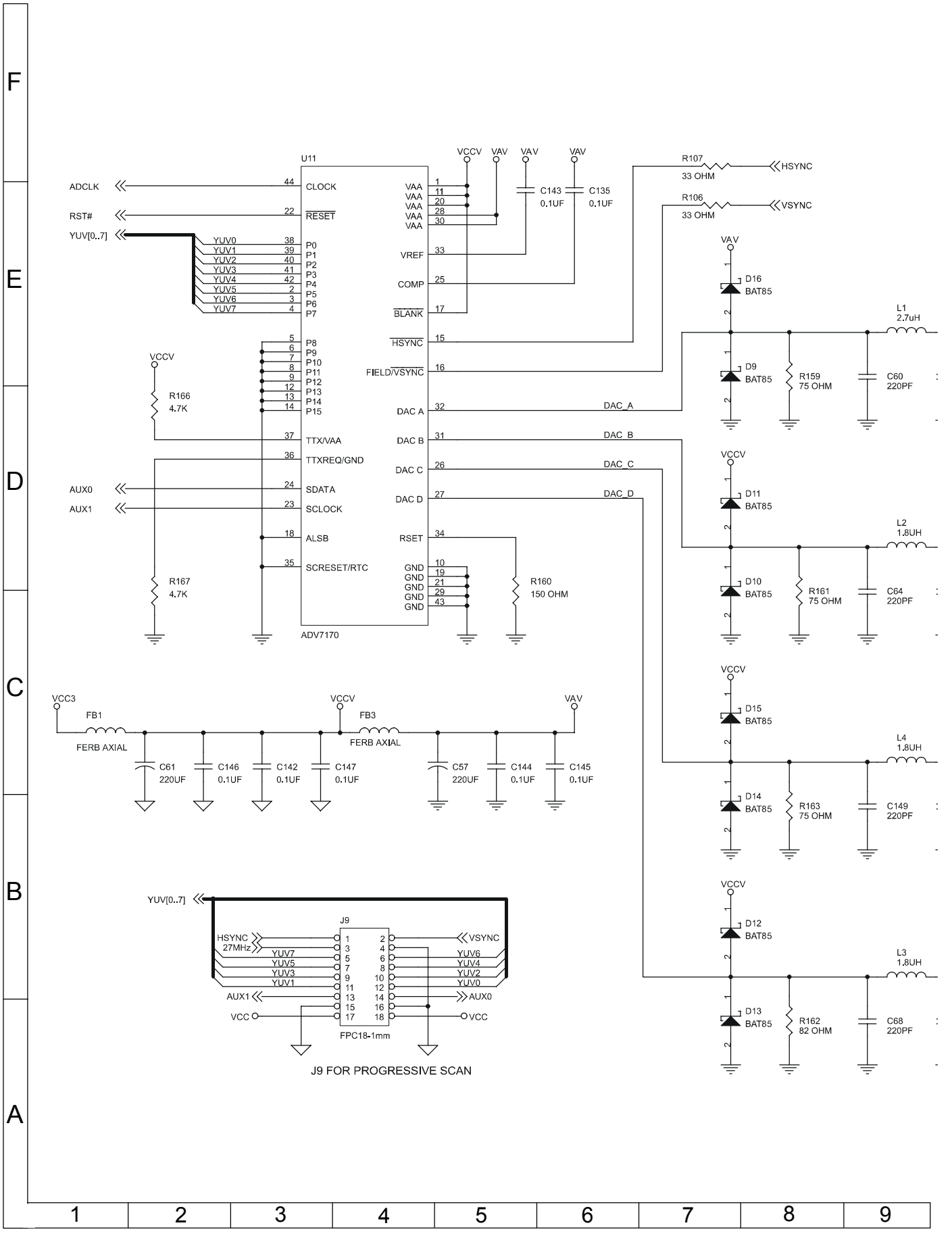


EPROM/FLASH CONFIGURATION

U4	U5	R41	R42	R44	R46
27C040	OPEN	YES	OPEN	OPEN	OPEN
27C080	OPEN	YES	OPEN	OPEN	YES
29F040	OPEN	OPEN	YES	YES	OPEN

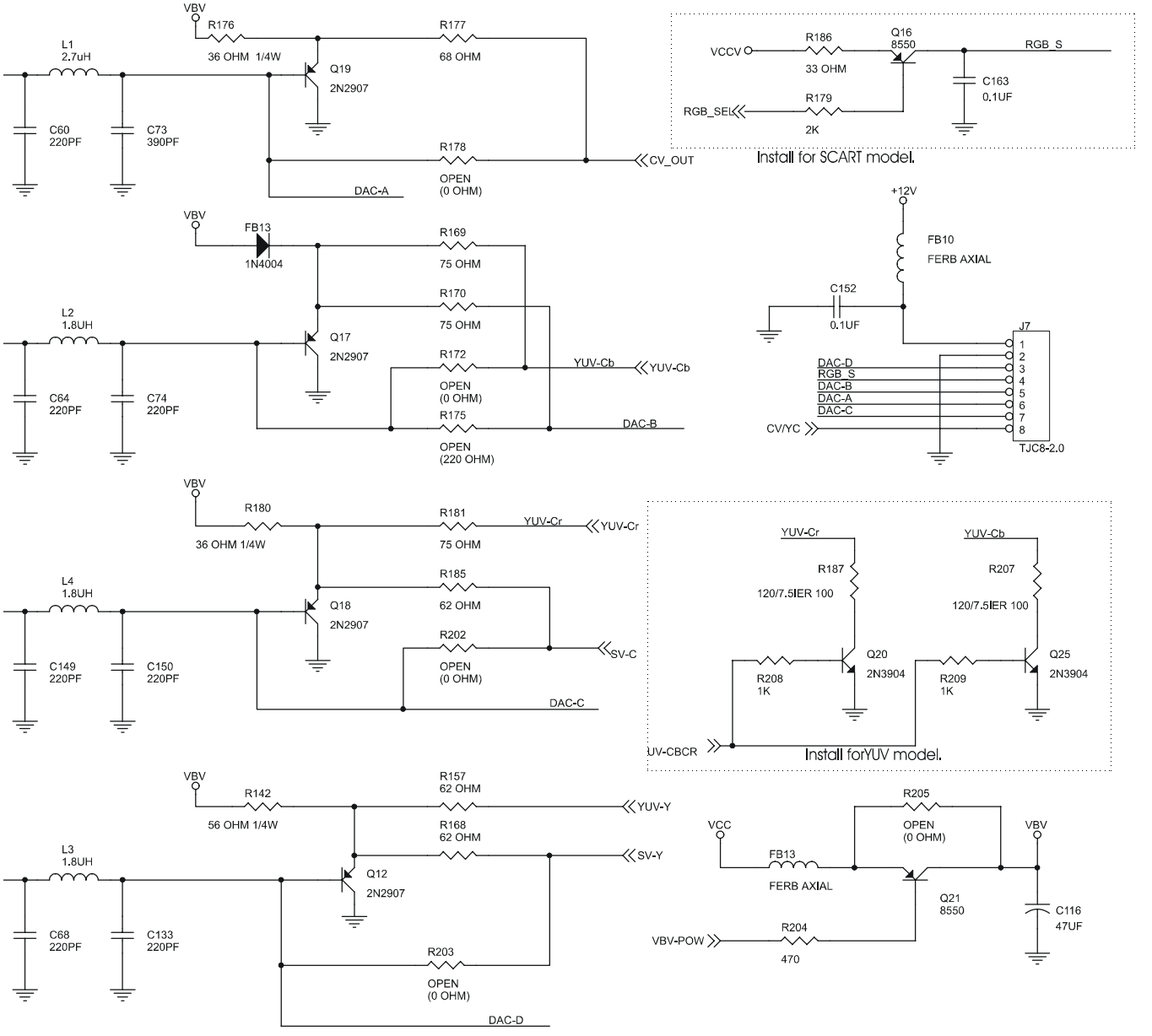
9	10	11	12	13	14	15	16	17

10-7. TV ENCODER



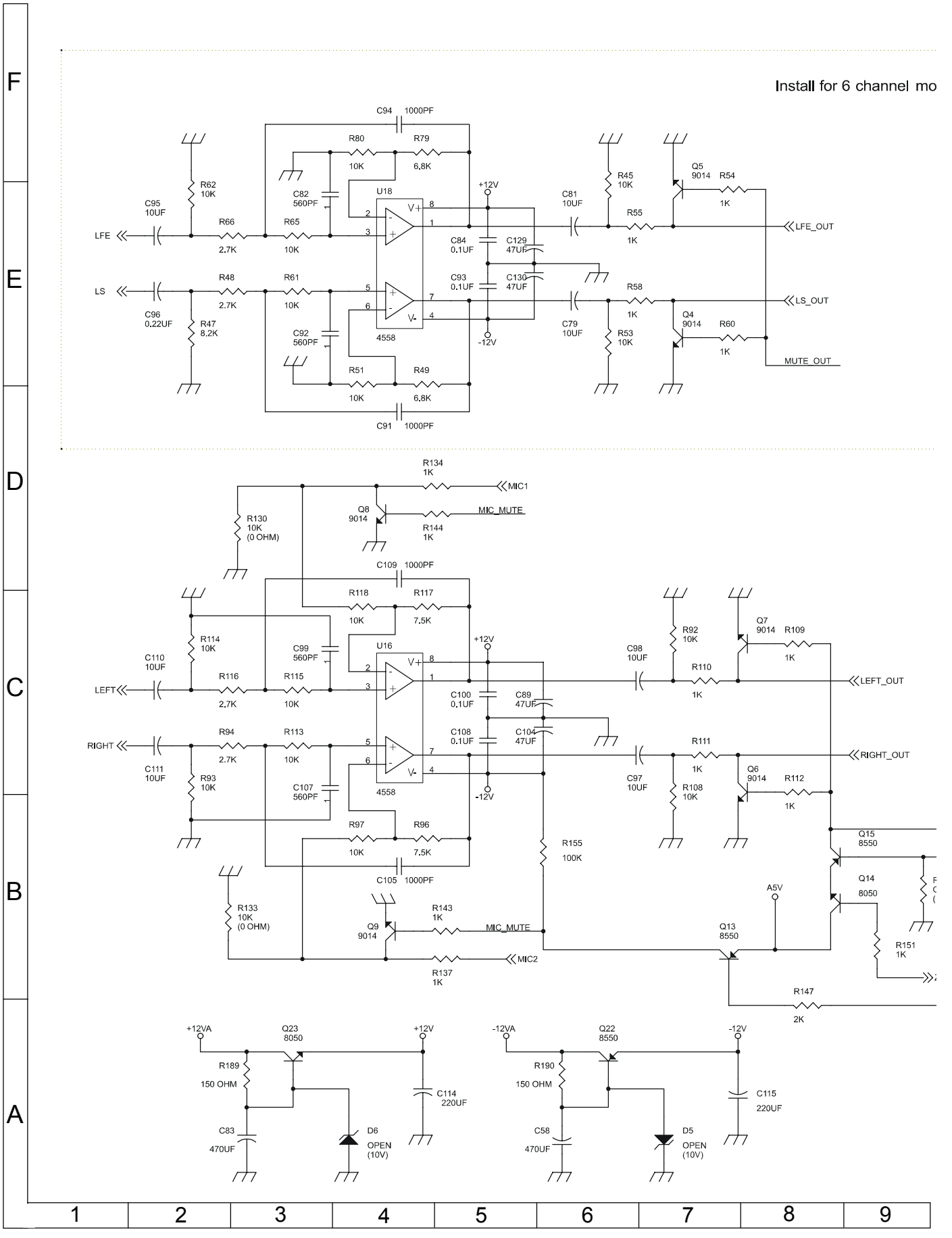
DAC MAP

MODE	DAC-A	DAC-B	DAC-C	DAC-D	CV/YC-STATE	RGB_S
SVIDEO	CVBS	CVBS	C	Y	NORMAL	LOW
YCrCb	CVBS	U(Cb)	V(Cr)	Y	NORMAL	LOW
SCART-RGB	CVBS	B	R	G	NORMAL	HIGH
SCART-CVBS	CVBS	U	V	Y	NORMAL	LOW
SCART-YC	CVBS	CVBS	C	Y	SWAP A-D	LOW

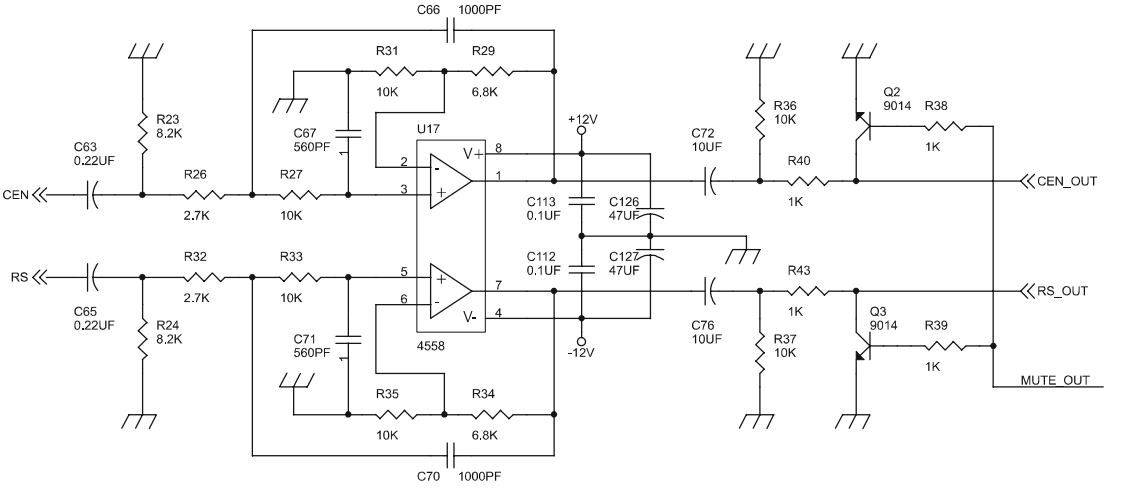


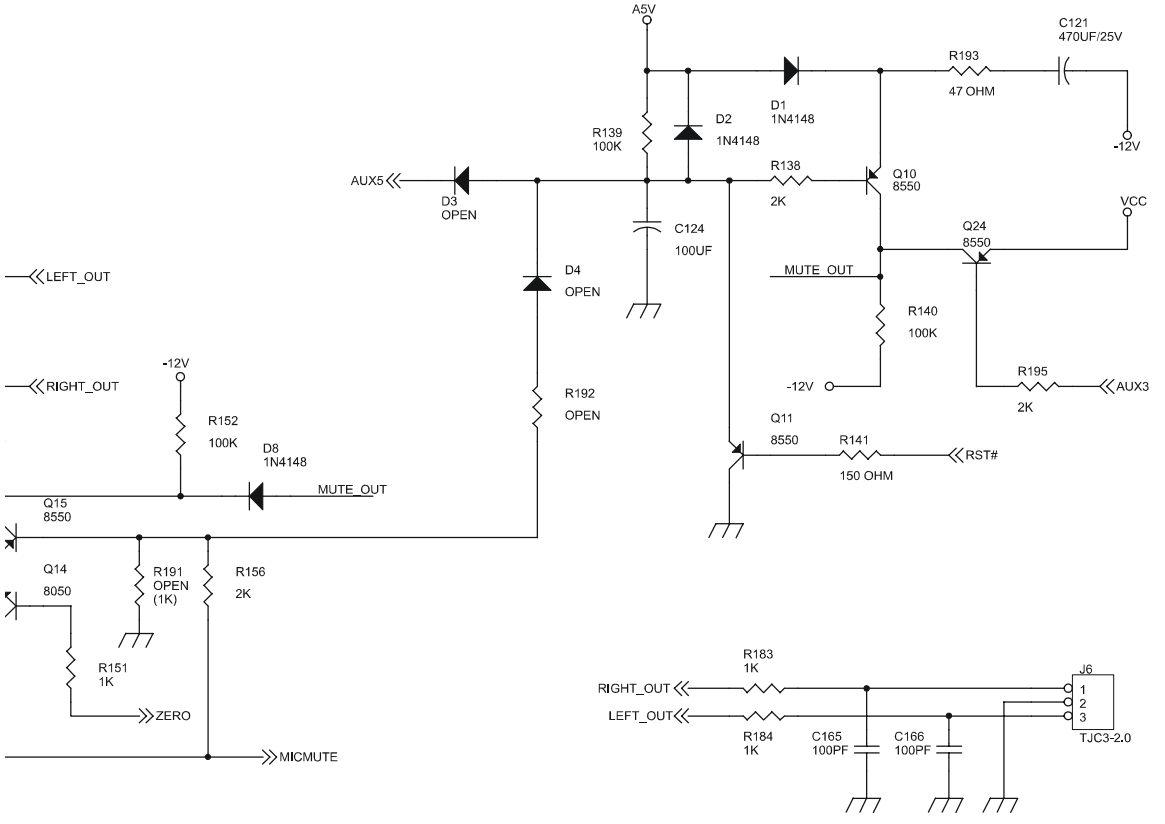
9	10	11	12	13	14	15	16	17

10-8. AUDIO DIAGRAM



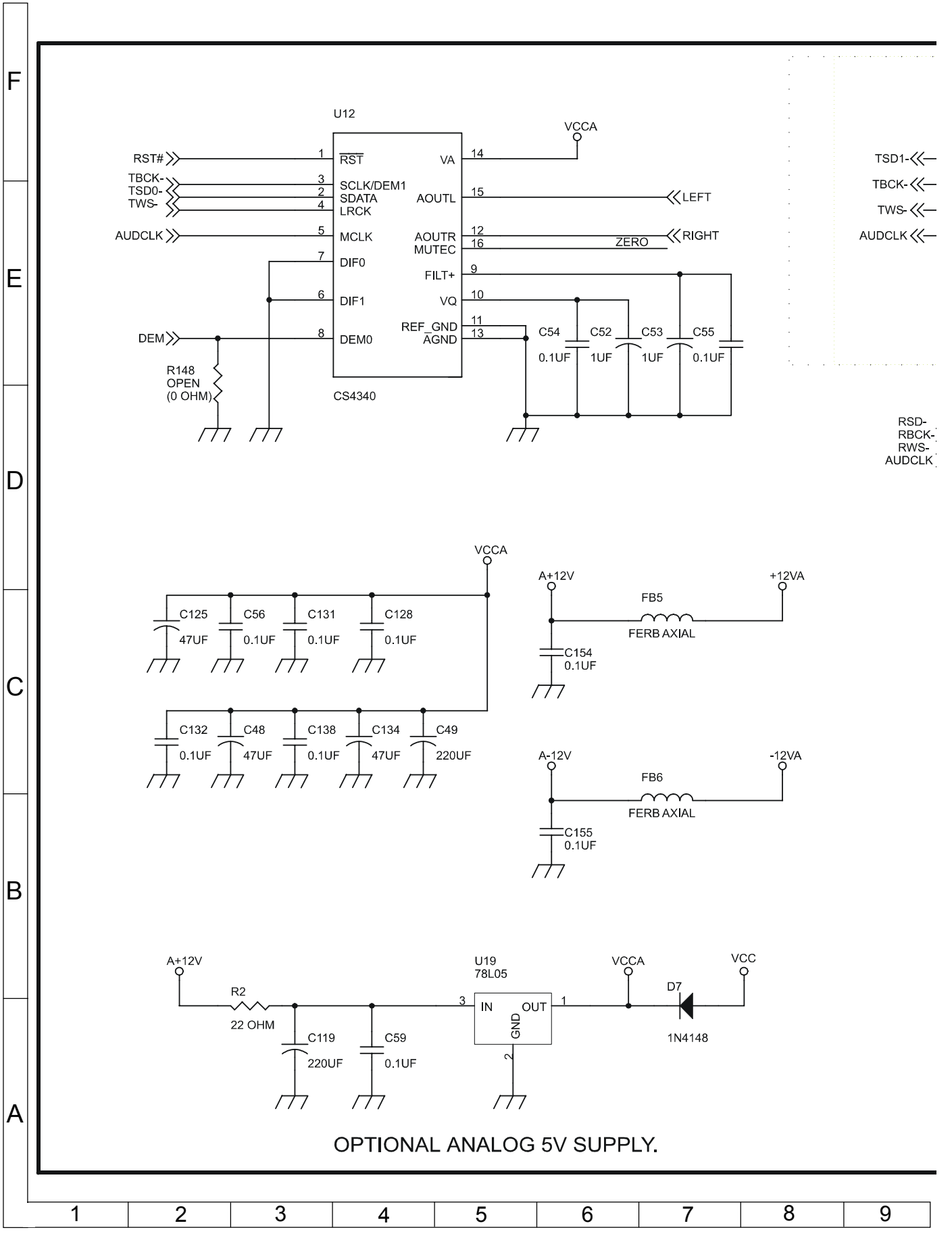
r 6 channel model.

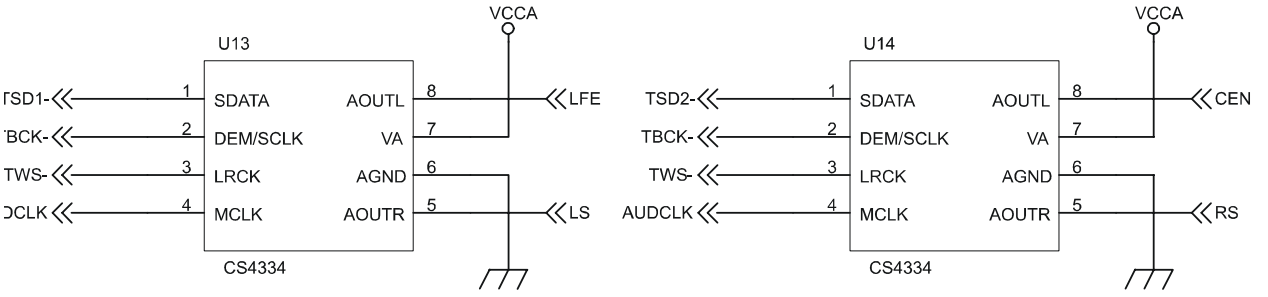




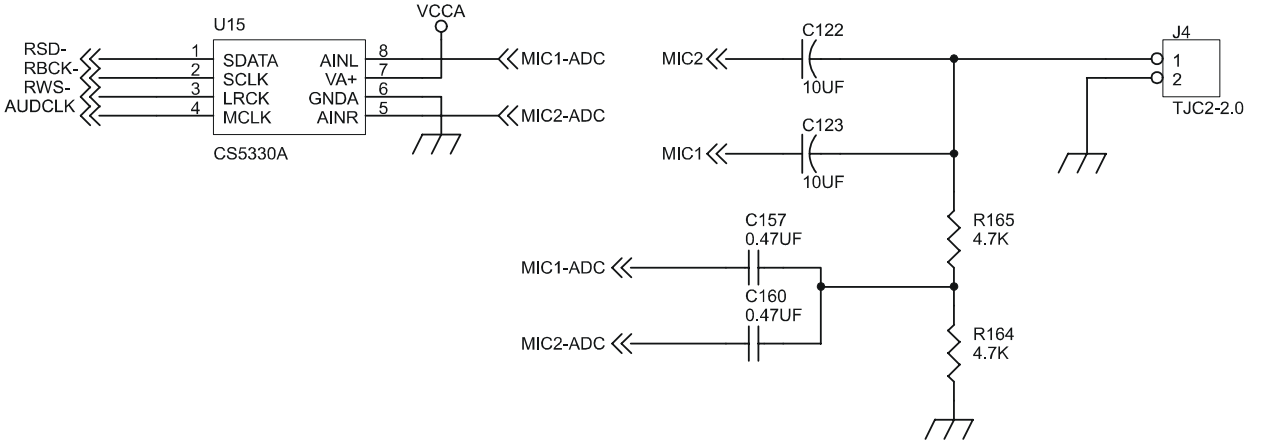
9	10	11	12	13	14	15	16	17

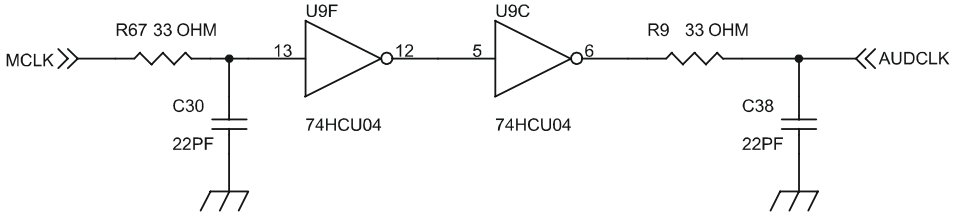
10-9. 6-CH/2-CH AUDIO

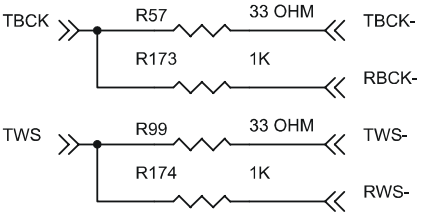


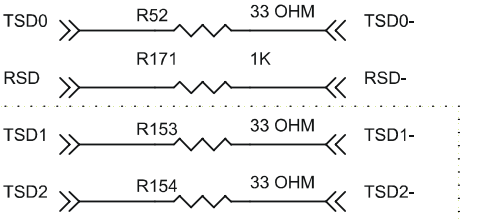


Install for 6 channel model.





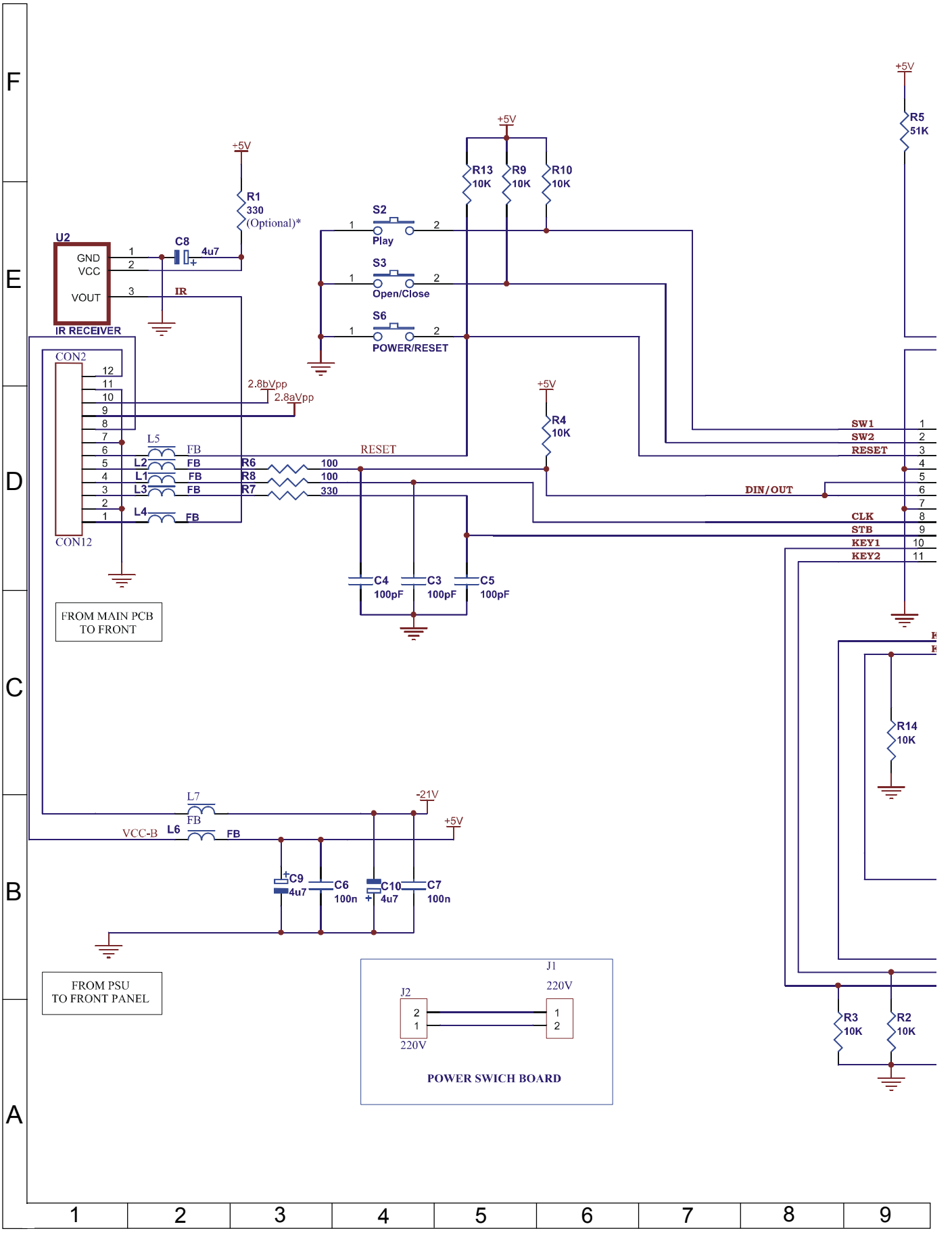


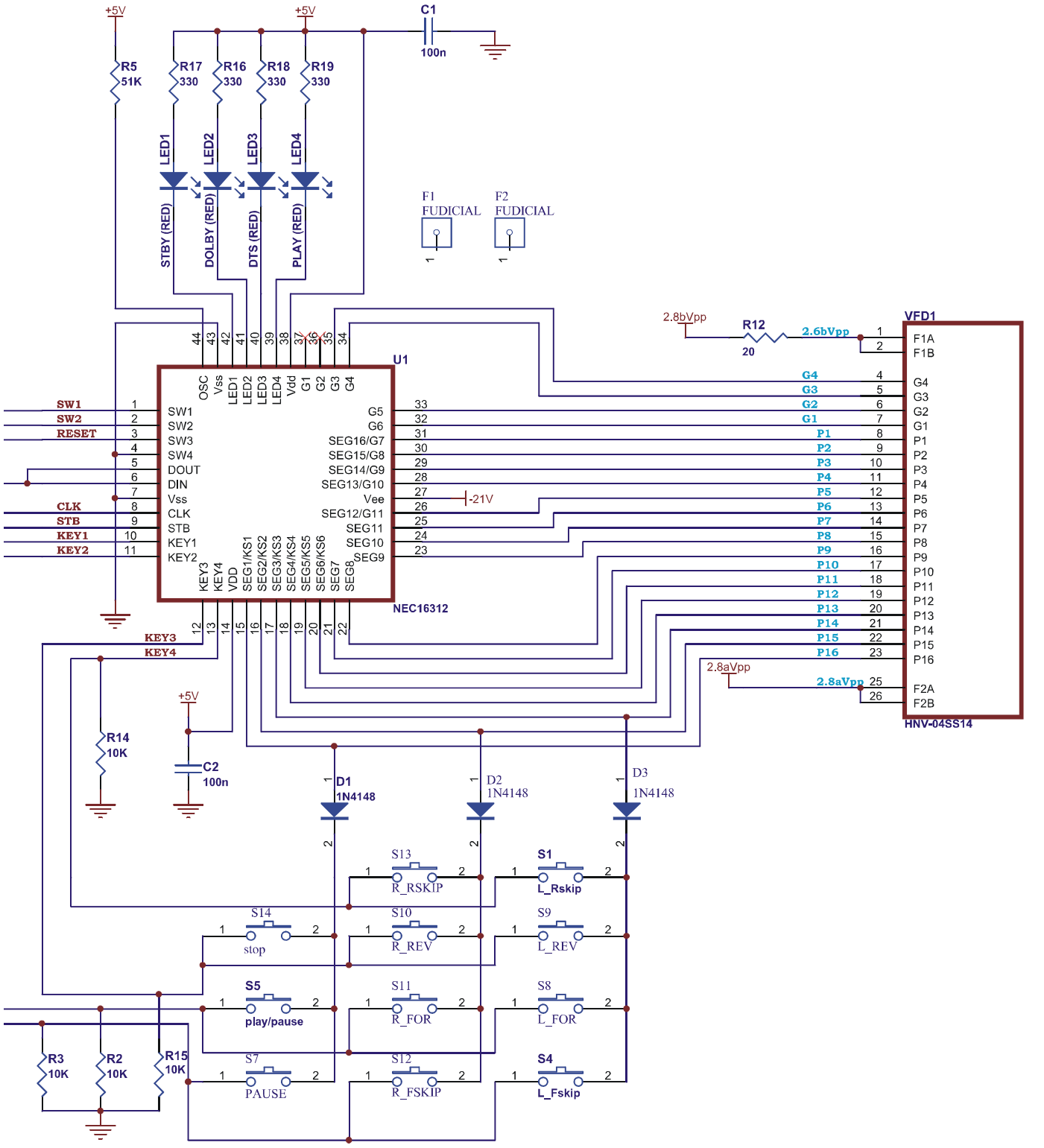


Install for 6 channel model.

9	10	11	12	13	14	15	16	17

10 -10. DISPLAY/OPTION DIAGRAM

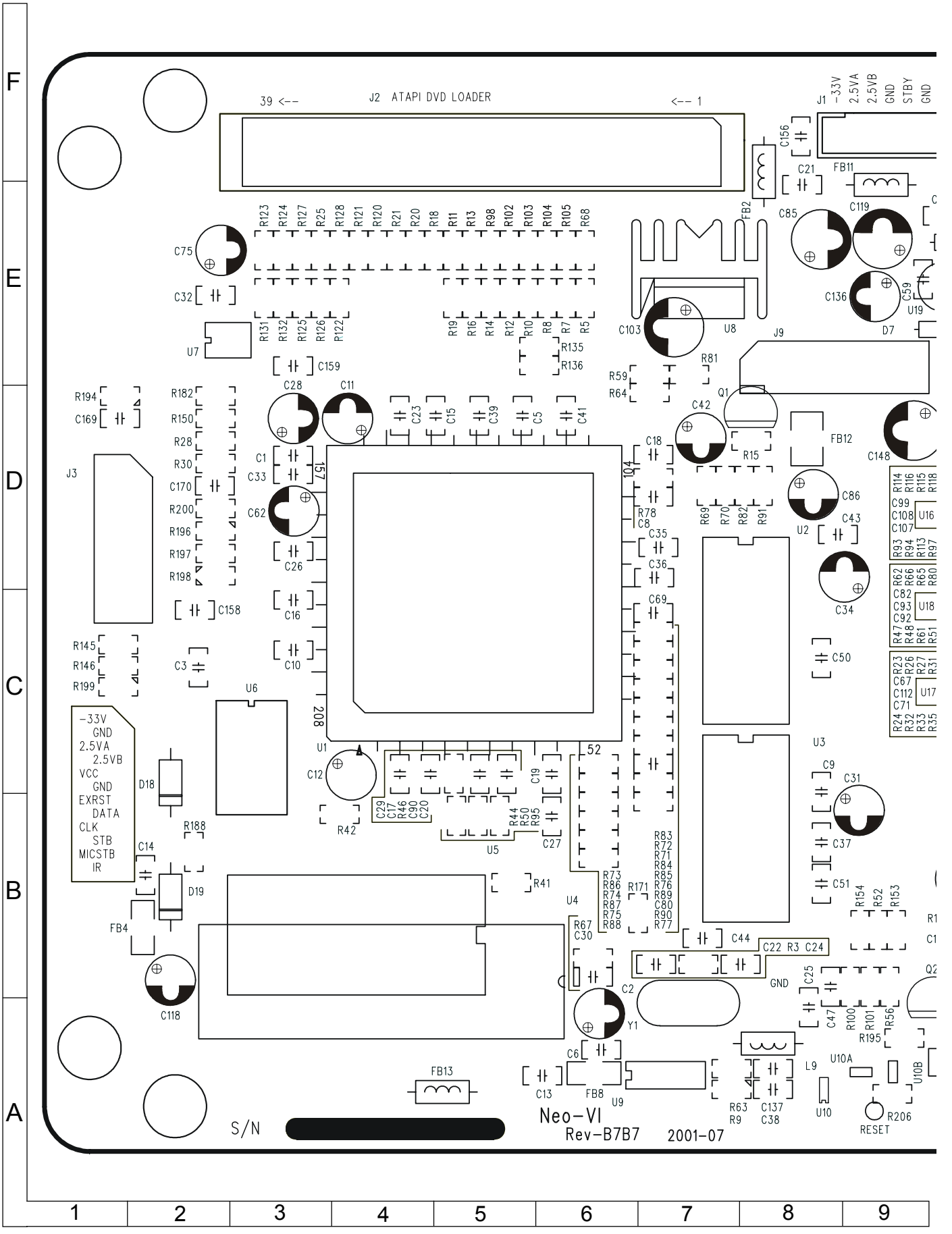


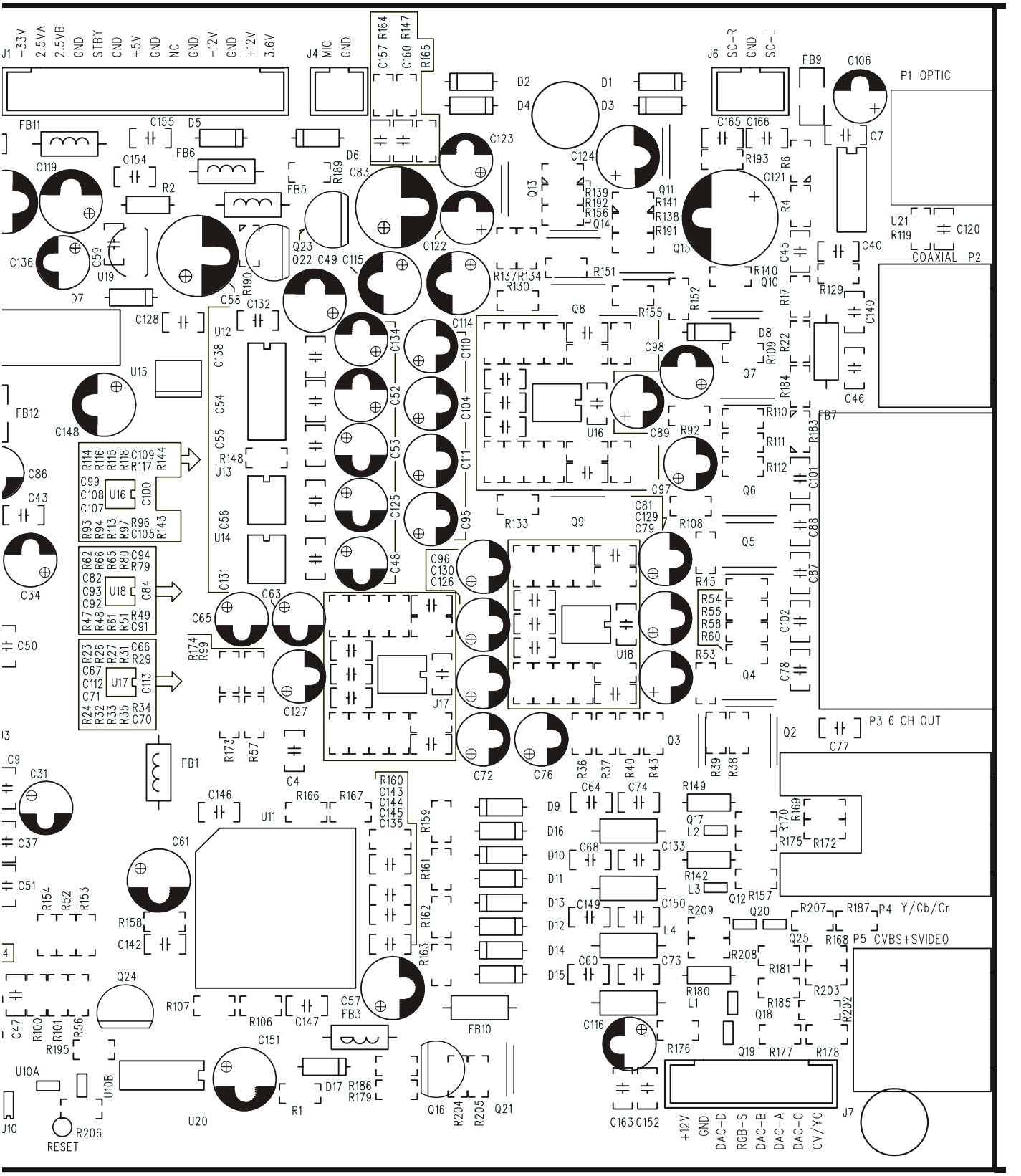


9	10	11	12	13	14	15	16	17

11. MAINBOARD

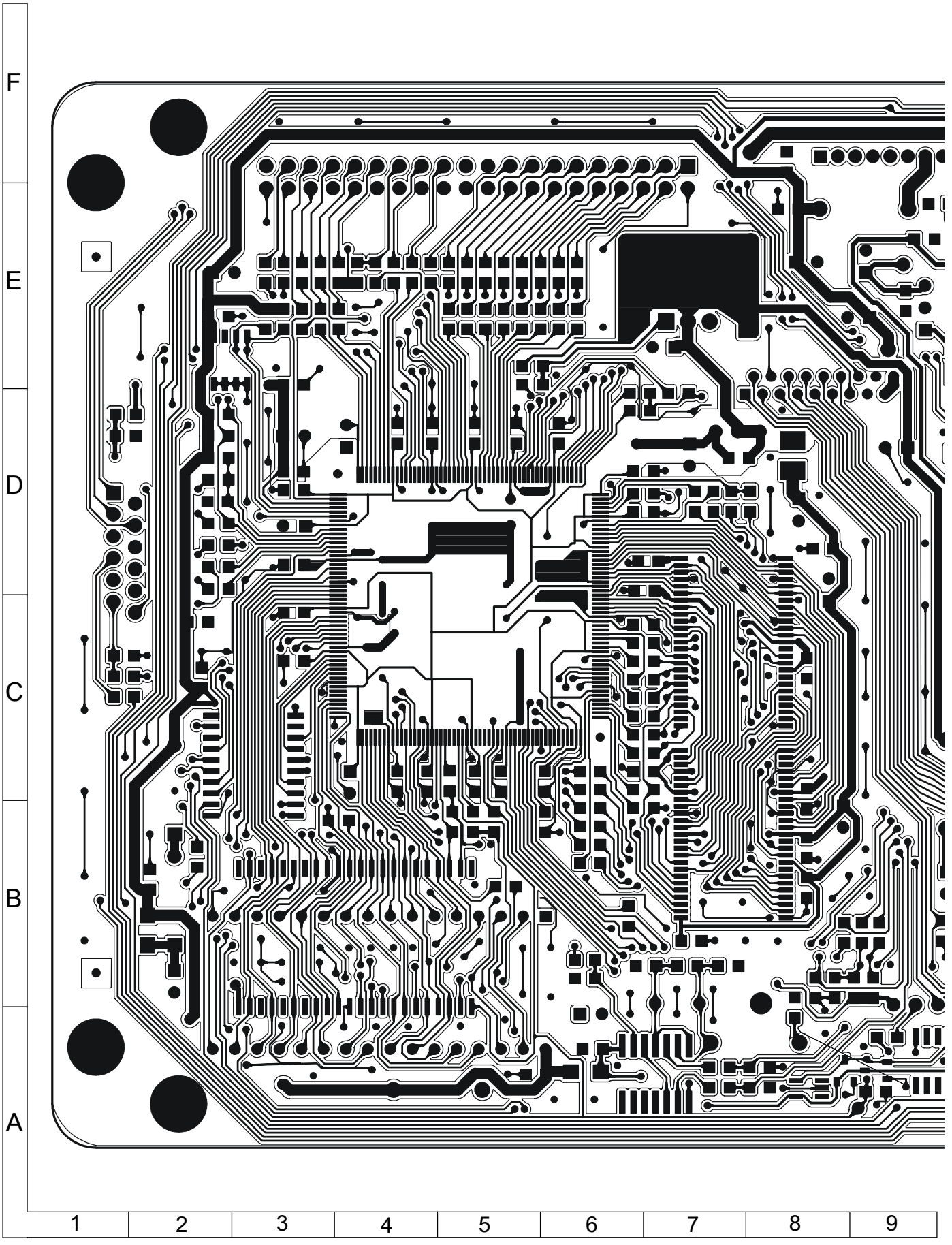
11 - 1. SILKSCREEN TOP

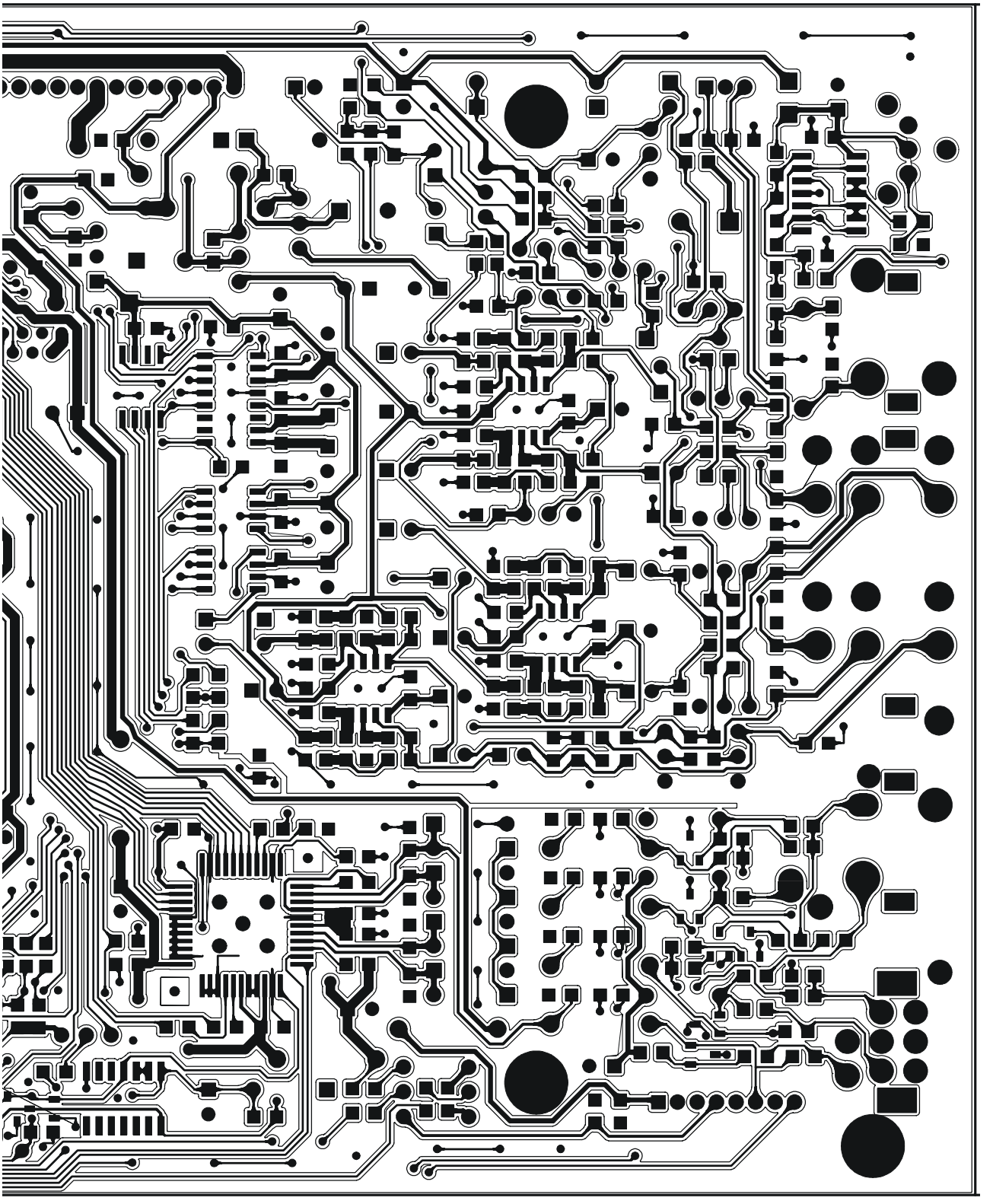




9	10	11	12	13	14	15	16	17

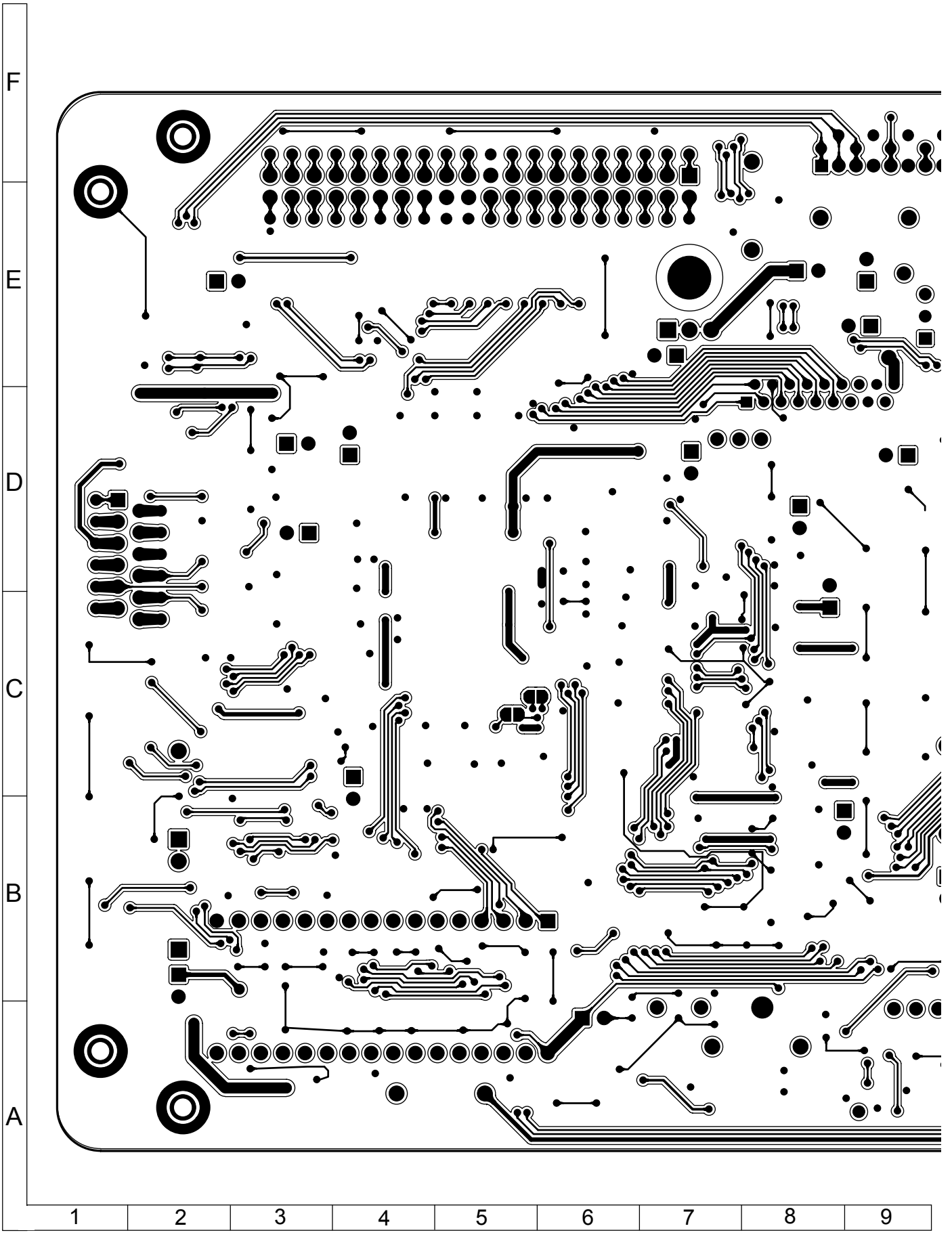
11 - 2. LAYER 1

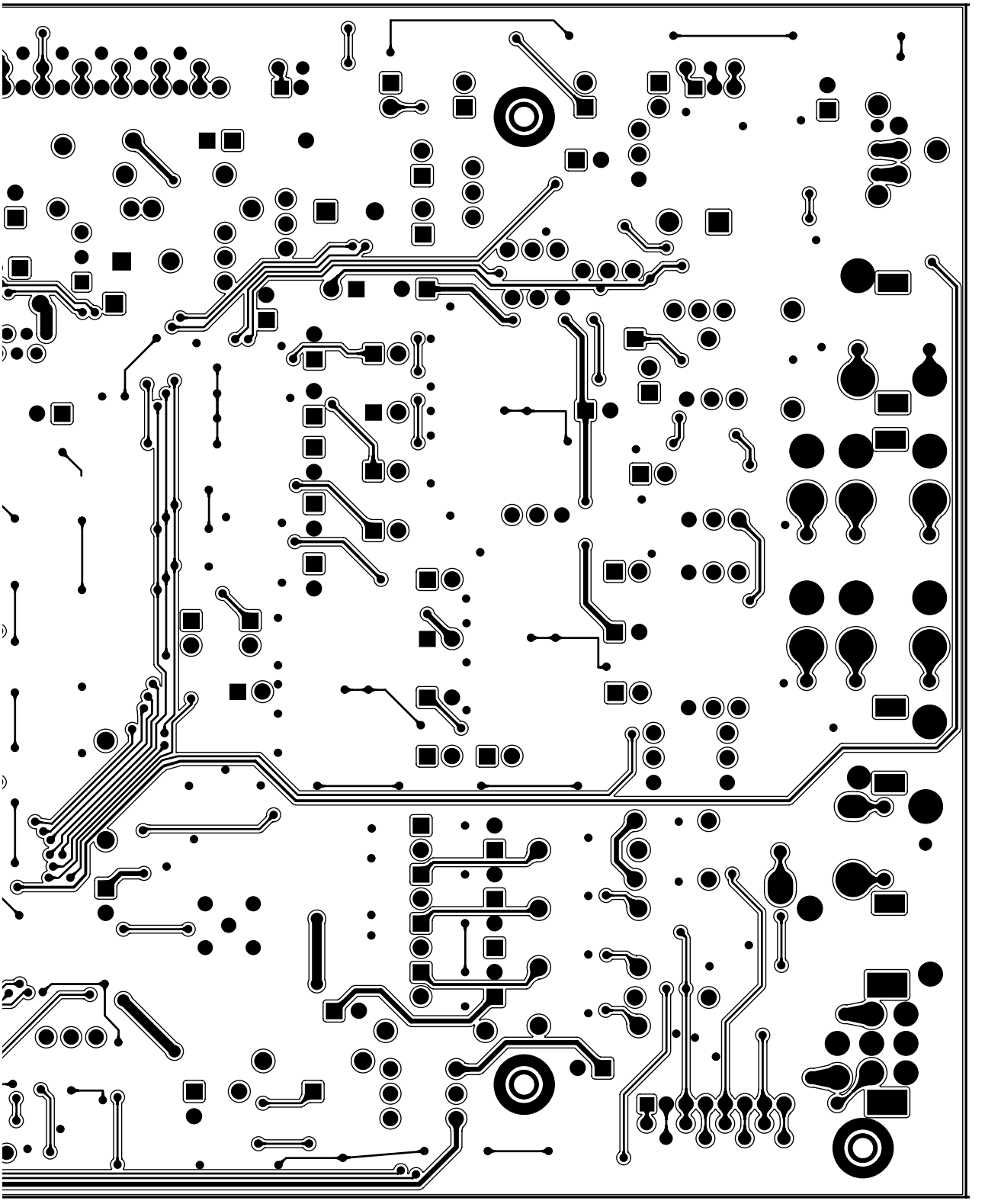




9	10	11	12	13	14	15	16	17

11 - 3. LAYER 2

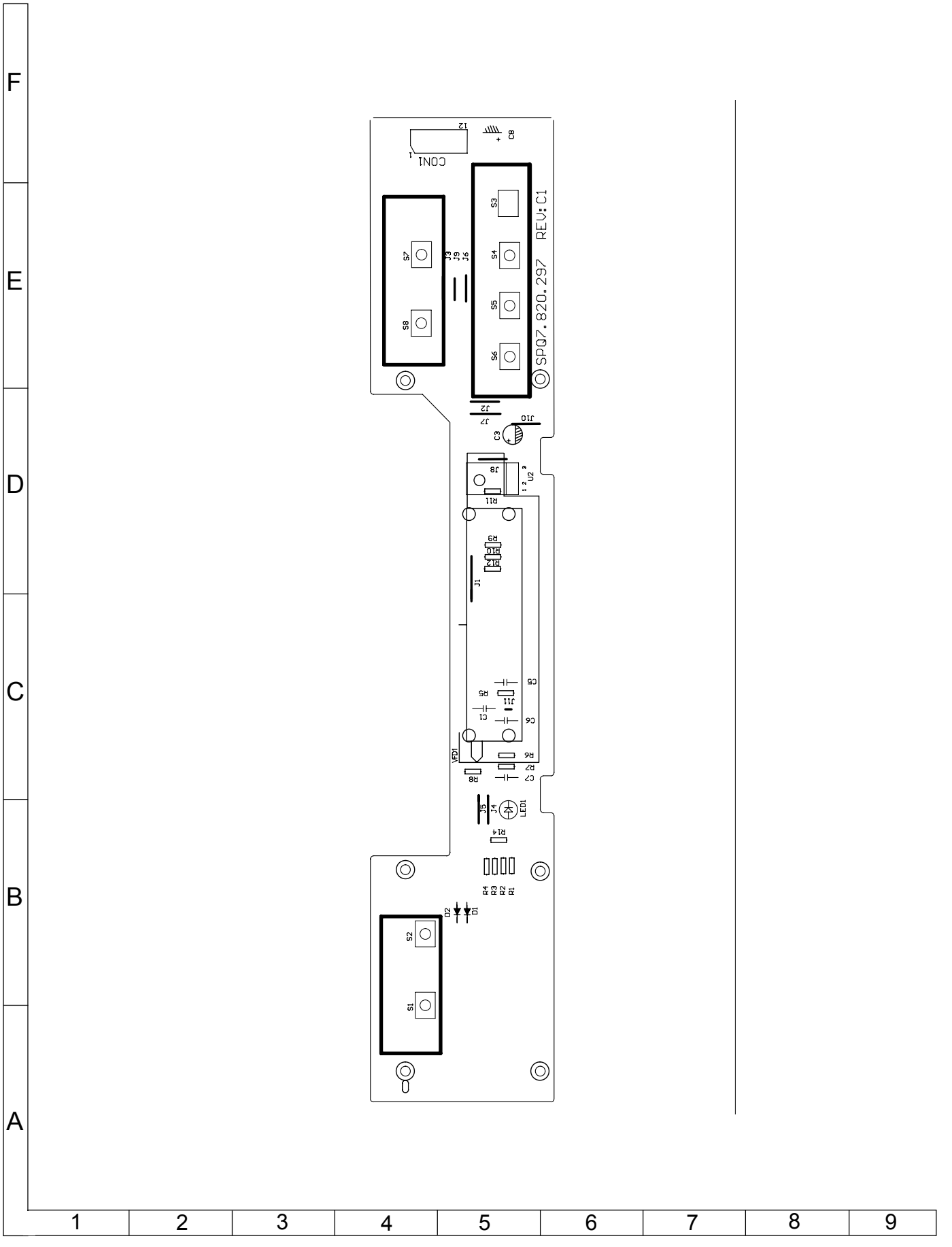




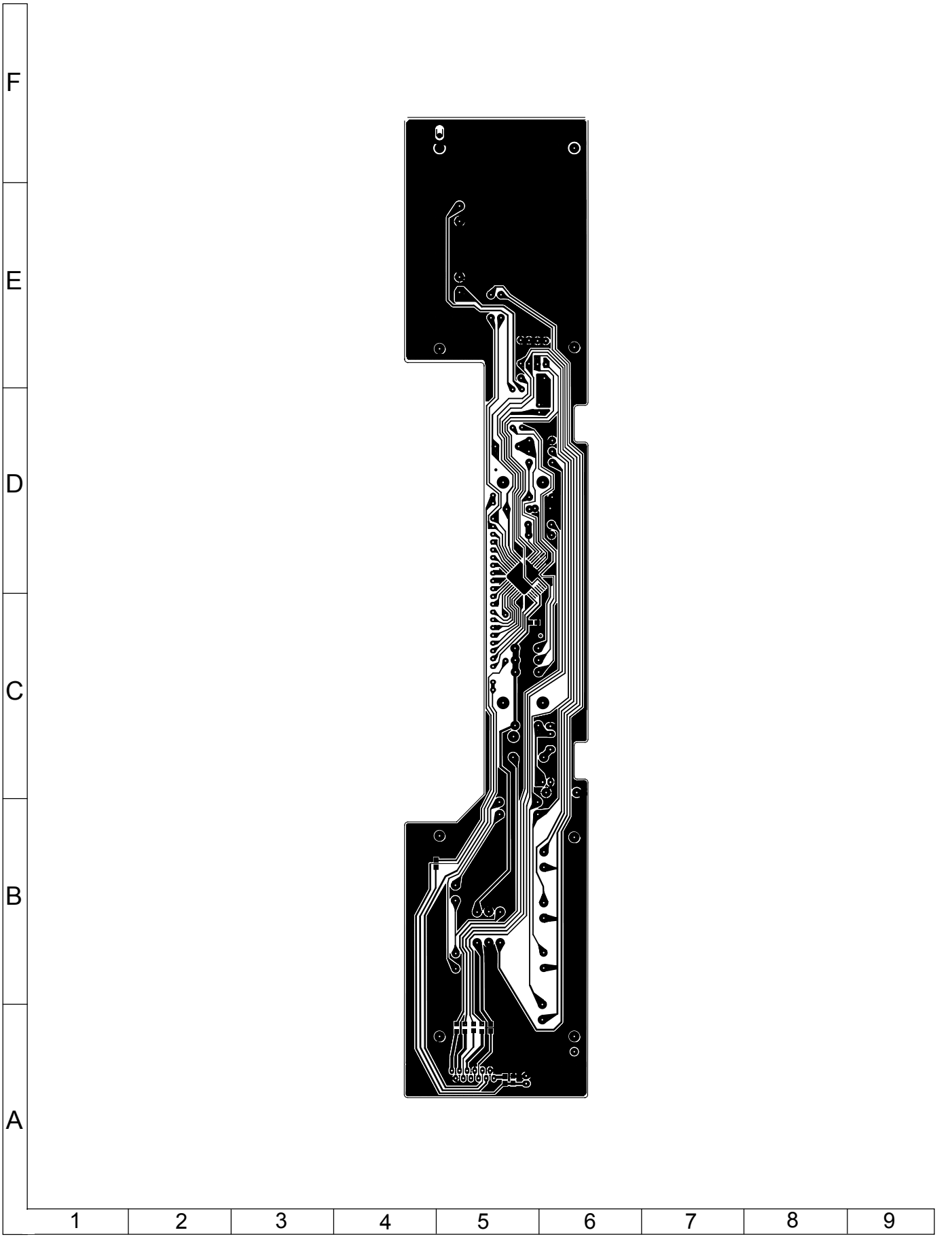
9	10	11	12	13	14	15	16	17

12. DISPLAY/OPTION BOARD

12 - 1. COMPONENT SIDE

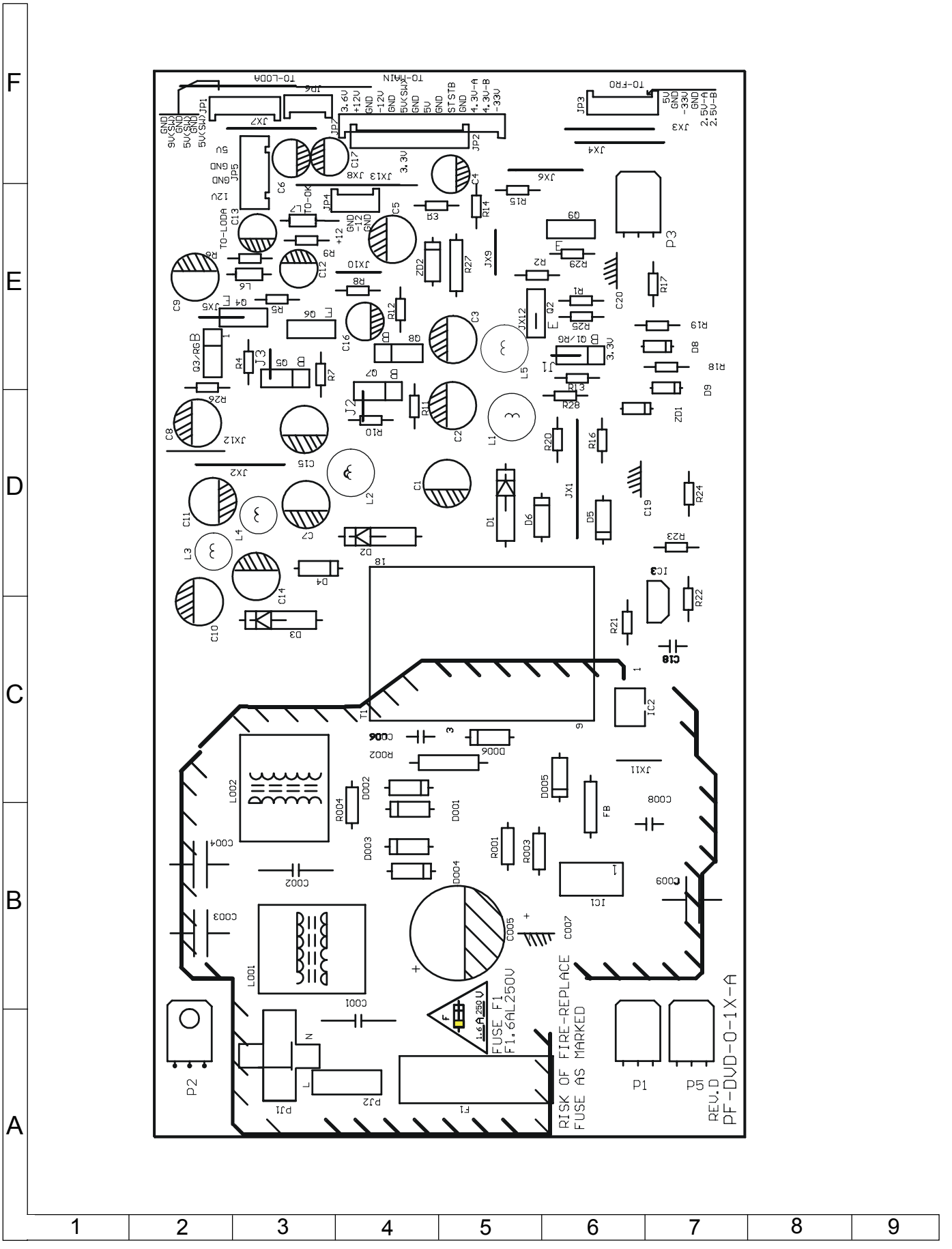


12 - 2. SOLDER SIDE

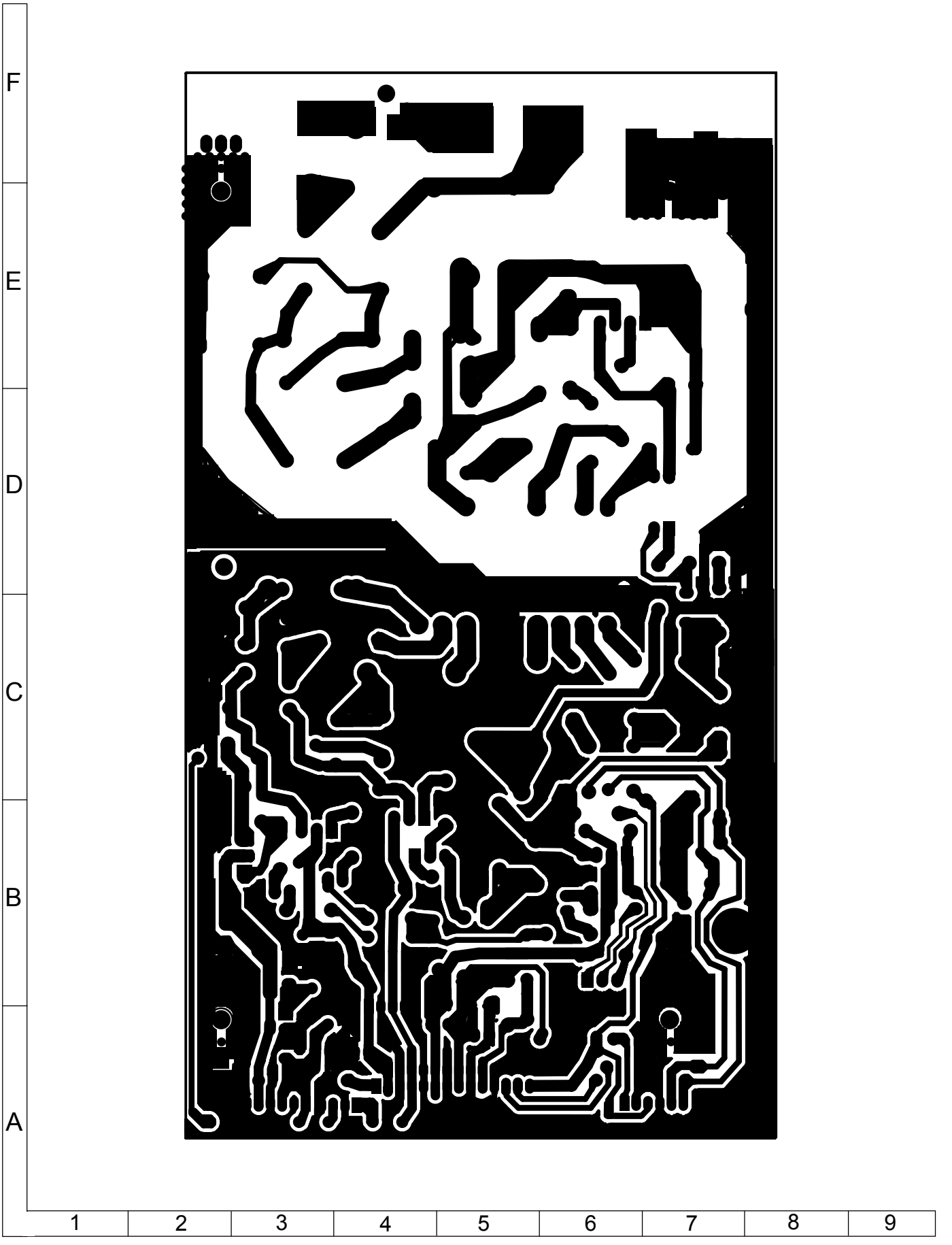


13. POWER SUPPLY PCB

13 - 1. COMPONENT SIDE A



13 - 2. COMPONENT SIDE B



14. REPLACEMENT PARTS LIST/ EXPLODED VIEWS

ELECTRICAL PARTS LIST

Parts marked with "⚠" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

"HOW TO ORDER REPLACEMENT PARTS"

HMARK : SPARE PARTS-DELIVERY SECTION : ALL JAPAN

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION
5. PRICE CODE

⚠ MARK: SAFETY RELATED PARTS

PWB ASSEMBLY IS NOT REPLACEMENT ITEM

Ref. No.	Part No.	★	Description	Code

PRINTED WIRING BOARD ASSEMBLIES *(NOT REPLACEMENT ITEM)*

RUNTG1046-1	Main PWB Unit	–
RUNTZ1038-1	Display PWB Unit	–
RUNTV1023-1	SCART PWB Unit	
RUNTP1015-1	POWER PWB Unit	

RUNTG1046-1 MAIN PWB UNIT

CAPACITORS

C1	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C2	9HLACU1AG476M=	E, CAP 47uF 16V
C3-10	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C11	9HLACU1AG106M=	E, CAP 10uF 16V
C12	9HLACU1AG106M=	E, CAP 10uF 16V
C13-21	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C22	9HLGGN1HH220J=	C, CAP .CH 22pF 50V
C23	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C24	9HLGGN1HH220J=	C, CAP .CH 22pF 50V
C25	9HLBGN1HY102K=	C, CAP .CH 1000pF 50V
C26	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C27	9HLGGN1HH150J=	C, CAP .CH 15pF 50V
C28	9HLACU1AG476M=	E, CAP 47uF 16V
C29	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C30	9HLGGN1HH220J=	C, CAP .CH 22pF 50V
C31	9HLACU1AG106M=	E, CAP 10uF 16V
C32	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C33	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C34	9HLACU1AG106M=	E, CAP 10uF 16V
C35-37	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C38	9HLGGN1HH220J=	C, CAP .CH 22pF 50V
C39	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C40	9HLGGN1HH220J=	C, CAP .CH 22pF 50V
C41	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C42	9HLACU1AG476M=	E, CAP 47uF 16V
C43-45	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C46	9HLGGN1HH220J=	C, CAP .CH 22pF 50V
C47	9HLGGN1HH220J=	C, CAP .CH 22pF 50V
C48	9HLACU1AG476M=	E, CAP 47uF 16V
C49	9HLACU1AG227M=	E, CAP 220uF 16V
C50	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C51	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C52	9HLACU1HG105M=	E, CAP 1uF 50V
C53	9HLACU1HG105M=	E, CAP 1uF 50V
C54-56	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C57	9HLACU1AG227M=	E, CAP 220uF 16V
C58	9HLACU1CG477M=	E, CAP 470uF 16V
C59	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C60	9HLGGN1HH221J=	C, CAP .CH 220pF 50V
C61	9HLACU1AG227M=	E, CAP 220uF 16V
C62	9HLACU1AG106M=	E, CAP 10uF 16V
C64	9HLGGN1HH221J=	C, CAP .CH 220pF 50V
C63	9HLGGN1HH221J=	C, CAP .CH 220pF 50V
C69	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C73	9HLGGN1HH221J=	C, CAP .CH 220pF 50V
C74	9HLGGN1HH221J=	C, CAP .CH 220pF 50V
C75	9HLACU1AG476M=	E, CAP 47uF 16V
C80	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C83	9HLACU1CG477M=	E, CAP 470uF 16V
C85	9HLACU1AG227M=	E, CAP 220uF 16V
C86	9HLACU1AG106M=	E, CAP 10uF 16V
C89	9HLACU1AG476M=	E, CAP 47uF 16V
C90	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C97	9HLACU1AG106M=	E, CAP 10uF 16V
C98	9HLACU1AG106M=	E, CAP 10uF 16V
C99	9HLBNN1HY561K=	C, CAP .CH 560pF 50V
C100	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C101,102	9HLGGN1HH220J=	C, CAP .CH 22pF 50V
C103	9HLACU1AG227M=	E, CAP 220uF 16V
C104	9HLACU1AG476M=	E, CAP 47uF 16V
C105	9HLGGN1HH102K=	C, CAP .CH 1000pF 50V
C106	9HLACU1AG476M=	E, CAP 47uF 16V
C107	9HLBNN1HY561K=	C, CAP .CH 560pF 50V
C108	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C109	9HLGGN1HH102K=	C, CAP .CH 1000pF 50V
C110	9HLACU1AG106M=	E, CAP 10uF 16V
C111	9HLACU1AG106M=	E, CAP 10uF 16V
C114,115	9HLACU1AG227M=	E, CAP 220uF 16V
C116	9HLACU1CG470M=	E, CAP 47uF 16V
C119	9HLACU1AG227M=	E, CAP 220uF 16V
C120	9HLGGN1HH220J=	C, CAP .CH 22pF 50V
C121	9HLACU1EG477M=	E, CAP 470uF 25V
C124,	9HLACU1AG107M=	E, CAP 100uF 16V
C125	9HLACU1AG476M=	E, CAP 47uF 16V
C128	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C131,132	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C133	9HLGGN1HH221J=	C, CAP .CH 220pF 50V
C134	9HLACU1AG476M=	E, CAP 47uF 16V
C135	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C136	9HLACU1AG476M=	E, CAP 47uF 16V
C137	9HLGGN1HH220J=	C, CAP .CH 22pF 50V
C138	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C140	9HLGGN1HH220J=	C, CAP .CH 22pF 50V
C142-147	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C148	9HLACU1AG227M=	E, CAP 220uF 16V
C149,150	9HLGGN1HH221J=	C, CAP .CH 220pF 50V
C154,155,156	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C158,159	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V
C169	9HLFGN1EY104Z=	C, CAP .CH 0.1uF 50V

RESIST ORS

R1	9HLGNVA-103J=	C,RES CH 1/10W 10K
R2	9HLPTV4-220J	C,RES 1/4W 22
R3	9HLGNVA-104J=	C,RES CH 1/10W 100K
R5	9HLGNVA-330J=	C,RES CH 1/10W 33
R7-14	9HLGNVA-330J=	C,RES CH 1/10W 33
R15	9HLGNVA-000J=	C,RES CH 1/10W 0
R16	9HLGNVA-330J=	C,RES CH 1/10W 33
R17	9HLGNVA-331J=	C,RES CH 1/10W 330
R18,19	9HLGNVA-330J=	C,RES CH 1/10W 33
R20,21	9HLGNVA-470J=	C,RES CH 1/10W 47
R22	9HLGNVA-101J=	C,RES CH 1/10W 100
R25	9HLGNVA-470J=	C,RES CH 1/10W 47
R28	9HLGNVA-472J=	C,RES CH 1/10W 4.7K
R30	9HLGNVA-330J=	C,RES CH 1/10W 33
R41	9HLGNVA-000J=	C,RES CH 1/10W 0
R46	9HLGNVA-000J=	C,RES CH 1/10W 0
R50	9HLGNVA-472J=	C,RES CH 1/10W 4.7K
R52	9HLGNVA-330J=	C,RES CH 1/10W 33
R56	9HLGNVA-472J=	C,RES CH 1/10W 4.7K
R57	9HLGNVA-330J=	C,RES CH 1/10W 33
R59	9HLGNVA-330J=	C,RES CH 1/10W 33
R63	9HLGNVA-000J=	C,RES CH 1/10W 0
R64	9HLGNVA-330J=	C,RES CH 1/10W 33
R67	9HLGNVA-330J=	C,RES CH 1/10W 33
R68	9HLGNVA-470J=	C,RES CH 1/10W 47
R69-72	9HLGNVA-330J=	C,RES CH 1/10W 33
R73-77	9HLGNVA-100J=	C,RES CH 1/10W 10
R78	9HLGNVA-330J=	C,RES CH 1/10W 33
R81	9HLGNVA-330J=	C,RES CH 1/10W 33
R82	9HLGNVA-100J=	C,RES CH 1/10W 10
R83	9HLGNVA-330J=	C,RES CH 1/10W 33
R84-91	9HLGNVA-100J=	C,RES CH 1/10W 10
R92,93	9HLGNVA-103J=	C,RES CH 1/10W 10K
R94	9HLGNVA-272J=	C,RES CH 1/10W 2.7K
R95	9HLGNVA-472J=	C,RES CH 1/10W 4.7K
R96	9HLGNVA-752J=	C,RES CH 1/10W 7.5K
R97	9HLGNVA-103J=	C,RES CH 1/10W 10K
R98,99	9HLGNVA-330J=	C,RES CH 1/10W 33

RUNTG1046-1
MAIN PWB UNIT(Continued)

Rd01	9HLCNVA-472J=	C,RES CH 1/10W 4.7K
Rd02-107	9HLCNVA-330J=	C,RES CH 1/10W 33
Rd08	9HLCNVA-103J=	C,RES CH 1/10W 10K
Rd09-112	9HLCNVA-102J=	C,RES CH 1/10W 1K
Rd13-115	9HLCNVA-103J=	C,RES CH 1/10W 10K
Rd16	9HLCNVA-272J=	C,RES CH 1/10W 2.7K
Rd17	9HLCNVA-752J=	C,RES CH 1/10W 7.5K
Rd18	9HLCNVA-103J=	C,RES CH 1/10W 10K
Rd19	9HLCNVA-330J=	C,RES CH 1/10W 33
Rd20	9HLCNVA-470J=	C,RES CH 1/10W 47
Rd21	9HLCNVA-472J=	C,RES CH 1/10W 4.7K
Rd22-124	9HLCNVA-470J=	C,RES CH 1/10W 47
Rd25-127	9HLCNVA-330J=	C,RES CH 1/10W 33
Rd28	9HLCNVA-472J=	C,RES CH 1/10W 4.7K
Rd29	9HLCNVA-330J=	C,RES CH 1/10W 33
Rd30	9HLCNVA-000J=	C,RES CH 1/10W 0
Rd31,132	9HLCNVA-102J=	C,RES CH 1/10W 1K
Rd33	9HLCNVA-000J=	C,RES CH 1/10W 0
Rd38	9HLCNVA-202J=	C,RES CH 1/10W 2K
Rd39,140	9HLCNVA-104J=	C,RES CH 1/10W 100K
Rd41	9HLCNVA-151J=	C,RES CH 1/10W 150
Rd42	9HLPTV4-360J	C,RES 1/4W 36
Rd45	9HLCNVA-000J=	C,RES CH 1/10W 0
Rd50	9HLCNVA-103J=	C,RES CH 1/10W 10K
Rd51	9HLCNVA-102J=	C,RES CH 1/10W 1K
Rd52	9HLCNVA-104J=	C,RES CH 1/10W 100K
Rd57	9HLCNVA-620J=	C,RES CH 1/10W 62
Rd58	9HLCNVA-330J=	C,RES CH 1/10W 33
Rd59	9HLCNVA-750J=	C,RES CH 1/10W 75
Rd60	9HLCNVA-151J=	C,RES CH 1/10W 150
Rd62	9HLCNVA-820J=	C,RES CH 1/10W 82
Rd61,163	9HLCNVA-750J=	C,RES CH 1/10W 75
Rd66,167	9HLCNVA-472J=	C,RES CH 1/10W 4.7K
Rd68	9HLCNVA-620J=	C,RES CH 1/10W 62
Rd72	9HLCNVA-000J=	C,RES CH 1/10W 0
Rd78	9HLCNVA-000J=	C,RES CH 1/10W 0
Rd80	9HLPTV4-360J	C,RES 1/4W 36
Rd81	9HLCNVA-750J=	C,RES CH 1/10W 75
Rd82	9HLCNVA-102J=	C,RES CH 1/10W 1K
Rd85	9HLCNVA-620J=	C,RES CH 1/10W 62
Rd87	9HLCNVA-101J=	C,RES CH 1/10W 100
Rd88	9HLCNVA-000J=	C,RES CH 1/10W 0
Rd89,190	9HLCNVA-151J=	C,RES CH 1/10W 150
Rd93	9HLCNVA-470J=	C,RES CH 1/10W 47
Rd95	9HLCNVA-202J=	C,RES CH 1/10W 2K
R204	9HLCNVA-471J=	C,RES CH 1/10W 470
R206	9HLCNVA-473J=	C,RES CH 1/10W 47K
R207	9HLCNVA-101J=	C,RES CH 1/10W 100
R208,209	9HLCNVA-102J=	C,RES CH 1/10W 1K
Rl94	9HLLF0001-1	FB CH 28 OHM
Rl96-193	9HLLF0001-1	FB CH 28 OHM

DIDOES

D1,2	9HL1N4148	DIODE 1N4148
D5,6	9HLMTZJ10B	ZENER DIODE 10V
D7	9HL1N4001/4004	DIODE 1N4001/4004
D8	9HL1N4148	DIODE 1N4148
D9-16	9HLBAT85	DIODE BAT85

TRANSISTORS

Q6,7	9HLCS9014	TRANSISTOR
Q10,11	9HL8550	TRANSISTOR
Q12	9HL2N2907	TRANSISTOR
Q13	9HL8550	TRANSISTOR
Q14	9HL8050	TRANSISTOR
Q15	9HL8550	TRANSISTOR
Q18	9HL2N2907	TRANSISTOR
Q20	9HL2N3904	TRANSISTOR
Q21	9HL8550	TRANSISTOR
Q22	9HL8550	TRANSISTOR
Q23	9HL8050	TRANSISTOR
Q24	9HL8550	TRANSISTOR
Q25	9HL2N3904	TRANSISTOR

IC

U1	9HLES4318F	IC
U2,3	9HLM12L16G16-1	IC
U4	9HL29F040	IC
U6	9HL74HCT374	IC
U7	9HL24C01	IC
U9	9HL74HCU04AP	IC
U10/U10B	9HLMAX809	IC
U11	9HLADV7170AKS	IC
U12	9HLCS4340	IC
U16	9HLNJM4558D	IC
U19	9HL78L05	REG IC
U21	9HL74HCT04D	IC

MISCELLANEOUS

FB1-3	9HLLF1017-1	FB 75 OHM
FB5-7	9HLLF1017-1	FB 75 OHM
FB8,9	9HLLF0005-1	FB CH 31 OHM
FB11	9HLLF1017-1	FB 75 OHM
FB12	9HLLF0005-1	FB CH 31 OHM
FB13	9HLLF1017-1	FB 75 OHM
L1	9HLDH1R8K0000	INDUCTOR 1.8uH
L2-4	9HLDH1R8K0000	INDUCTOR 1.8uH
J1	9HLCP030E-EJST	CONNECTOR 14P 2mm
J2	9HLCP2040-EJST	CONNECTOR 20x2P 2.54mmP
J3	9HLCP2012-EJST	CONNECTOR(FEMALE)12P
P2	9HLKP11180-1(BLACK)	SOCKET A99004-0025
P3	9HLKP11182-1	SOCKET A99004-0026
P4	9HLKP11181-1	SOCKET
P5	9HLCS1675-1	SOCKET
Y1	9HLSL5022-1	CRYSTAL OSCILLATOR
	9HLCH1580-132	SOCKET FOR U4

RUNTP1015-1
POWER PWB UNIT

CAPACITORS

⚠	C001	9HLEBF7EH683MX	METALIZED CAP 0.068uF 275V
⚠	C002	9HLEBF7EH104MX	METALIZED CAP 0.1uF 275V
⚠	C003,004	9HLFDU7BY471MX	Y-CAP 470pF 400VAC
⚠	C005	9HLACF2GG476M	E.CAP 47uF 400V
⚠	C006	9HLFDF2HY103Z	C.CAP 0.01uF 500V
⚠	C007	9HLACU1VG476M	E.CAP 47uF 35V
⚠	C008	9HLFDU1HY223Z	C.CAP 0.022uF 50V
⚠	C009	9HLFDU7BY102MX	Y-CAP 1000pF 400VAC
	C1	9HLACU1AG108M	E.CAP 1000uF 16V
	C2,3	9HLACU1AG108M	E.CAP 1000uF 10V
	C4	9HLACU1AG227M	E.CAP 220uF 10V
	C5	9HLACU0JG337M	E.CAP 330uF 6.3V
	C6	9HLACU0JG227M	E.CAP 220uF 6.3V
	C7,8	9HLACU1CG477M	E.CAP 470uF 16V
	C9	9HLACU1CG337M	E.CAP 330uF 16V
	C10,11	9HLACU1CG107M	E.CAP 100uF 16V
	C12	9HLACU1CG477M	E.CAP 470uF 16V
	C13	9HLACU1CG227M	E.CAP 220uF 16V
	C14,15	9HLACU1CG107M	E.CAP 100uF 16V
	C16	9HLACU1CG106M	E.CAP 10uF 16V
	C17	9HLACU1CG476M	E.CAP 47uF 16V
	C18	9HLFDU1HY104Z	C.CAP 0.1uF 50V
	C19,20	9HLACU1HG106M	E.CAP 10uF 50V

RESIST ORS

⚠	R001	9HLPTV4--224J	C.RES 1/4W 220K
⚠	R002	9HLMK01--563J	C.RES 1/4W 56K
⚠	R003	9HLPTV4--100J	C.RES 1/4W 10
⚠	R004	9HLPTV4--105J	C.RES 1/4W 1M
	R2	9HLPTV4--472J	C.RES 1/4W 4.7K
	R3	9HLPTV4--102J	C.RES 1/4W 1K
	R4	9HLPTV4--391J	C.RES 1/4W 390
	R7	9HLPTV4--331J	C.RES 1/4W 330
	R8	9HLPTV4--472J	C.RES 1/4W 4.7K
	R9	9HLPTV4--202J	C.RES 1/4W 2K
	R10	9HLPTV4--331J	C.RES 1/4W 330
	R11	9HLPTV4--100J	C.RES 1/4W 10
	R12	9HLPTV4--102J	C.RES 1/4W 1K
	R14	9HLPTV4--102J	C.RES 1/4W 1K
	R16	9HLPTV4--390J	C.RES 1/4W 39
	R17	9HLPTV4--103J	C.RES 1/4W 10K
	R18,19	9HLPTV4--152J	C.RES 1/4W 1.5K
	R20	9HLPTV4--100J	C.RES 1/4W 10
	R21	9HLPTV4--471J	C.RES 1/4W 470
	R22	9HLPTV4--102J	C.RES 1/4W 1K
	R23	9HLPTV4--1501F	MET.RES 1/4W 1.5K
	R24	9HLPTV4--1601F	MET.RES 1/4W 1.6K
	R26	9HLPTV4--751J	C.RES 1/4W 750
	R27	9HLPTV2--R15J	MEO.RES 1/2W 0.15
	R28	9HLPTV4--202J	C.RES 1/4W 2K
	R29	9HLPTV4--241J	C.RES 1/4W 240

DIODE

D001-004	9HL1N4004	DIODE 1N4004
D005	9HLSF14	DIODE FR157/SF14
D006	9HLFR154	DIODE FR154/FR157
D006	9HLFR157	DIODE FR154/FR157
D006	9HLSD145	DIODE FR154/FR157
D1a	9HL1N5822	DIODE 1N5822/SB3100
D1b	9HLSB3100	DIODE 1N5822/SB3100
D1c	9HLSD345	DIODE 1N5822/SB3100
D1d	9HLES38	DIODE 1N5822/SB3100
D2,3	9HLSB3100	DIODE SB3100/ES38
D2,3	9HLES38	DIODE SB3100/ES38
D2,3	9HL31DQ10	DIODE SB3100/ES38
D4a	9HLSB1100	DIODE SB1100/11EQS10
D4b	9HL11EQ10	DIODE SB1100/11EQS10
D4c	9HLFR152	DIODE SB1100/11EQS10
D5	9HLSF14	DIODE SF14
D6	9HLSF14	DIODE SF14/SD145
D8,9	9HL1N4148	DIODE 1N4148
ZD1a	9HL05W5B1	ZENER DIODE 5.1V
ZD1b	9HL079C5V	ZENER DIODE 5.1V
ZD2	9HL05W3B1	ZENER DIODE 3.0V

TRANSISTORS

Q1	9HL2SA1357	TRANSISTOR
Q1	9HLTIP32C	TRANSISTOR
Q2	9HL2SC1815	TRANSISTOR
Q5	9HL2SA1357	TRANSISTOR
Q5	9HLTIP32C	TRANSISTOR
Q6	9HL2SC1815	TRANSISTOR
Q7	9HL2SA562	TRANSISTOR
Q8	9HL2SA1015	TRANSISTOR
Q9	9HL2SC1815	TRANSISTOR

MISCELLANEOUS PARTS

⚠	IC1	9HLKA5L0380	PWM SWITCH IC
⚠	IC2	9HLSFH615A	OPTO-COUPLER IC
	IC2	9HLK817	OPTO-COUPLER IC
	IC2	9HLKP1010	OPTO-COUPLER IC
	IC3	9HLLM431	SHUNT REG IC
	IC3	9HLKA431	SHUNT REG IC
	RG	9HLAMS1085C	REG
	L1,2	9HLPH6RM0000	INDUCTOR
	L3,4	9HLTH6RM0000	INDUCTOR
	L5	9HLPH6RM0000	INDUCTOR
⚠	L001,002	9HLLF1097-1—-	LINE FILTER T-9803
	FB	9HLLF1070-1—-	FR RH3.5*6*0.8 75 OHM
⚠	T1	9HLT1098-1——	TRANSFOMER
⚠	F1	9HLD1R6F-12Y—	FUSE F1.6A , 250V
⚠	PJ1	9HLCP1611-1—-	CONNECTOR 2P(10mmP)
	JP5	9HLCP0044-JJST	CONNECTOR 4P(2.5mmP)
	JP7	9HLCP030E-EJST	CONNECTOR 14P(2.0mmP)
	P1-4	9HLR-1002-1—-	EARTH ANGLE
⚠	F1	9HLHC1017-1—-	FUSE CLIP
	JX5,9,10,11,R1,PJ2	9HLM-1039-1540	7.5mm
	JX6	9HLM-1039-1540	12.5mm
	JX2,3,4,7	9HLM-1039-1540	15mm
	JX8	9HLM-1039-1540	17.5mm
	JX1	9HLM-1039-1540	20mm
	L7	9HLM-1039-1540	10mm

RUNTZ1038-1
DISPLAY PWB UNIT

CAPACITORS

C1	9HLFCN1HY104Z	C.CAP 0.1uF 50V
C2	9HLFCN1HY104Z	C.CAP CH 0.1uF 50V
C3	9HLACU1CG475M	E.CAP 4.7uF 16V
C4	9HLFCN1HY104Z	C.CAP CH 0.1uF 50V
C5,6,7	9HLCCN1HH101K	C.CAP 100pF 50V

RESISTORS

R1,2,3,4	9HLPTV4--103J	C.RES 1/4W 10K
R5	9HLPTV6--331J	C.RES 1/4W 330
R6,7	9HLPTV4--101J	C.RES 1/4W 100
R8,9,10	9HLPTV4--103J	C.RES 1/4W 10K
R11	9HLPTV6--331J	C.RES 1/4W 330
R12	9HLPTV6--513J	C.RES 1/4W 51K
R13	9HLCNVA-200J	C.RES CH 1/10W 20
R14	9HLPTV6--331J	C.RES 1/4W 330

MISCELLANEOUS

L1,2,3,4,5,6	9HLKN152K0000	FB CH 1K5
S1-8	9HLA1214-11-1P	SWITCH TSTB-2
U1	9HLPT6312	IC
U2	9HLTFMS5380	IR RECEIVER UNIT
D1,2	9HL1N4148	DIODE 1N4148
LED1	9HL214001-C	LED
VFD1	9HL19-HNV-04S1	DISPLAY TUBE
CON1	9HLC1258-1	CONNECTOR(FEMALE)12P
VFD2	9HLD-0285-1P	VFD HOLDER
J11	9HLM-1039-1540	5mm
J3,6,8,9,10	9HLM-1039-1540	7.5mm
J2,4,5,7	9HLM-1039-1540	10mm
J1	9HLM-1039-1540	12.5mm

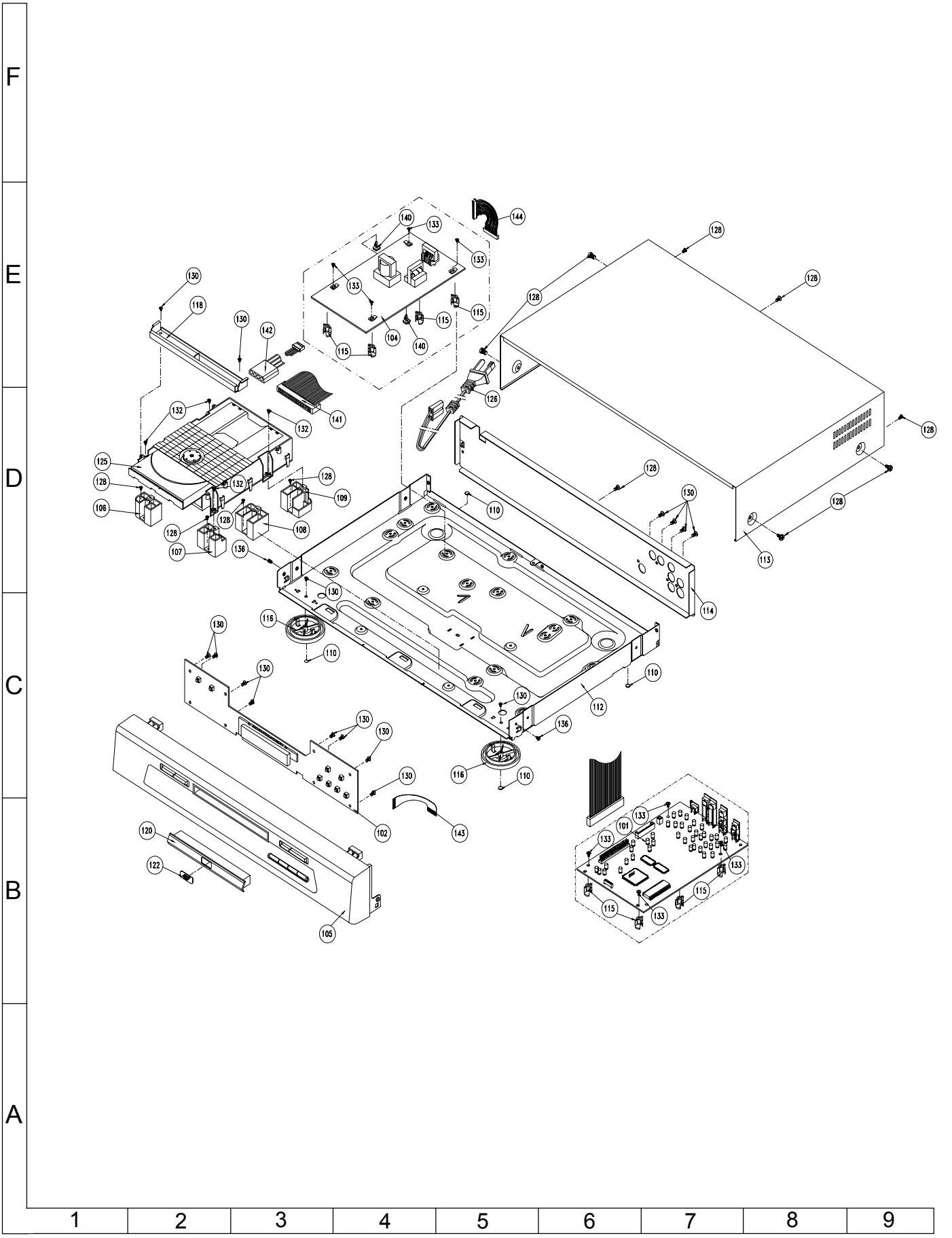
CABINET PARTS

101	9HLTG1046-1	Main PWB Unit
102	9HLTZ1038-1	Operation PWB Unit
104	9HLTP1015-1	Power PWB Unit
105	9HLLG0233-1F-B	Front Panel (740/740X/W/B)
105	9HLLG0233-1F-A	Front Panel (740T)
106	9HLDD0016-1F	Stand Of Loader (F/L)
107	9HLDD0015-1F	Stand Of Loader (F/R)
108	9HLDD0018-1F	Stand Of Loader (R/L)
109	9HLDD0017-1F	Stand Of Loader (F/R)
110	9HLSG0273-1	Cushion
112	9HLBB0298-1P	Low Cabinet
113	9HLBA0250-1P	Top Cabinet
114	9HLGB0068-1P-A	Rear Panel
115	9HLD-0286-1F	PWB Stand
116	9HLGP0011-1F	Front Foot
118	9HLGF0286-1P	Angle
120	9HLRP0225-1F	Tray Door
122	9HLG-0039-1	DVD Mark
124	9HLBD1178-1	Leaser Caution Label
125	9HL-120H	Loader
126	9HLCB1102-1DLL	AC-Cord (740X)
126	9HLCC1100-1DDL	AC-Cord (740/740W)
126	9HLCC1098-1DUL	AC-Cord (740B)
126	9HLCB1122-1DUL	AC-Cord (740T)
128	9HLHTSN30P0600	Screw
130	9HLFASD30P0800	Screw
132	9HLJASD30P1000	Screw
133	9HLEBSD30P1400	Screw
135	9HLHSSB30P0800	Screw
140	9HLD-0290-1F	Stand
141	9HLCP1614-1	Connecting Cord
142	9HLCS1679-1	Connecting Cord
143	9HLDP1199-1W	Connecting Cord
144	9HLCP1613-1	Connecting Cord
145	9HLBP0612-1F	SKIP KNOB
145	9HLBP0611-1F	PLAY KNOB
147	9HLBP0610-1F	POWER KNOB
148	9HLGP0389-1F	W-DEC
149	9HLDP0404-1F	FILTER

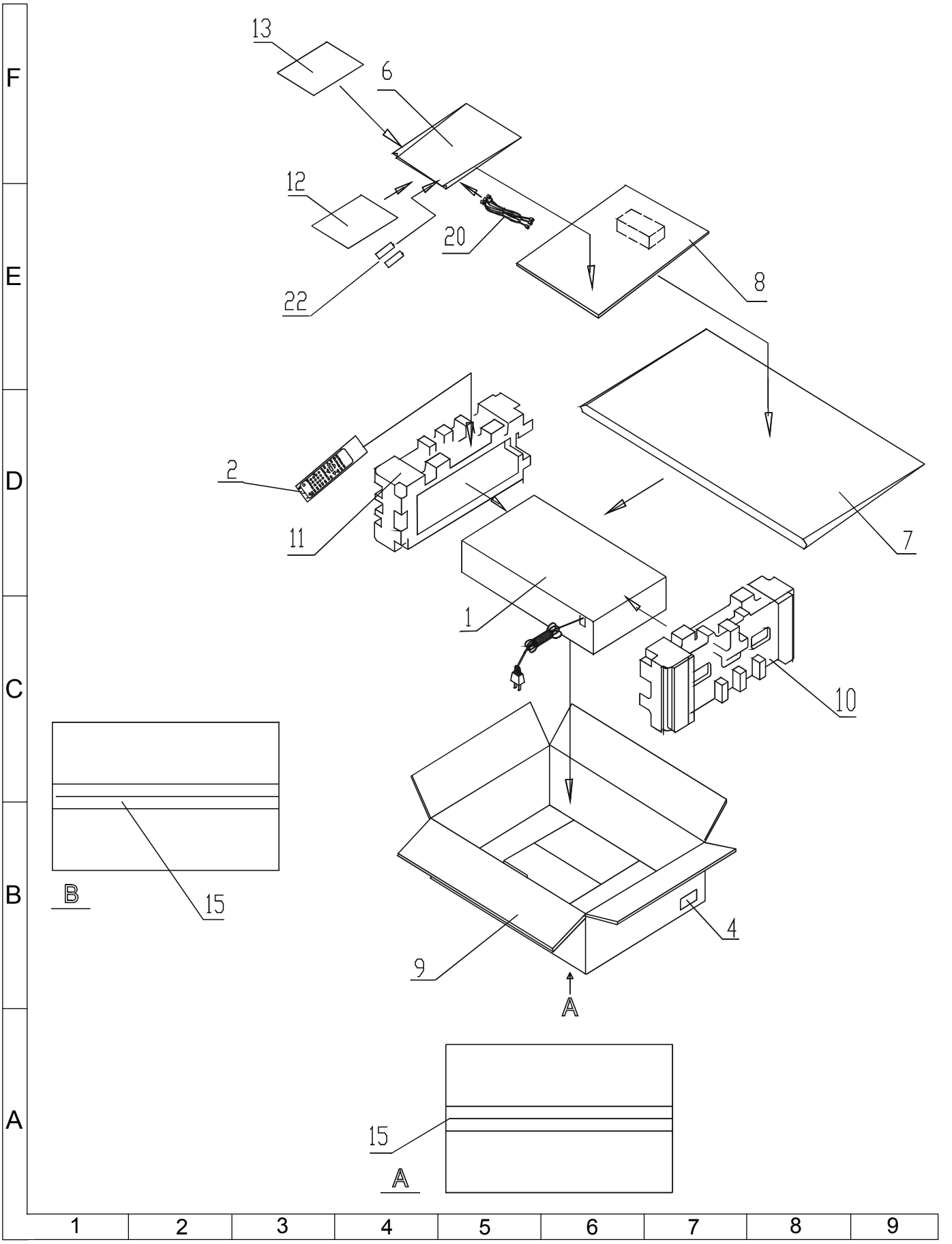
PACKING PARTS

1	DV-740/740X/W/B/T	DVD-PLAYER
2	9HL-740S	Remote Control (740/740X/W/B)
2	9HL-740U	Remote Control (740T)
4	9HLBD1118-1B	Bar Code Label
6	9HLKD0021-1	Polythylene Bag
7	9HLKH0140-1FW	Wrapping Pager
8	9HLKK0223-1	Partition
9	9HLKG0703-1--E	Packing Case
9	9HLKG0703-1--F	Packing Case
9	9HLKG0703-1--H	Packing Case
10	9HLKA0544--1	Packing Add
11	9HLKA0544--1	Packing Add
12	9HLSE1944 -1	Operation Manual For DV-740/740X/W
12	9HLSE1955 -1	Operation Manual For DV-740B
12	9HLSG1890 -1	Operation Manual For DV-740T
13	9HLSU1227 -1	Operation Manual For DV-740X
13	9HLSU1280 -1	Operation Manual For DV-740T
20	9HLTB0208 -1DD	AV Cable
22	9HLTB0208 -1DD	Battery (AAA)

CABINET EXPLODED VIEW



16. PACKING OF THE SET

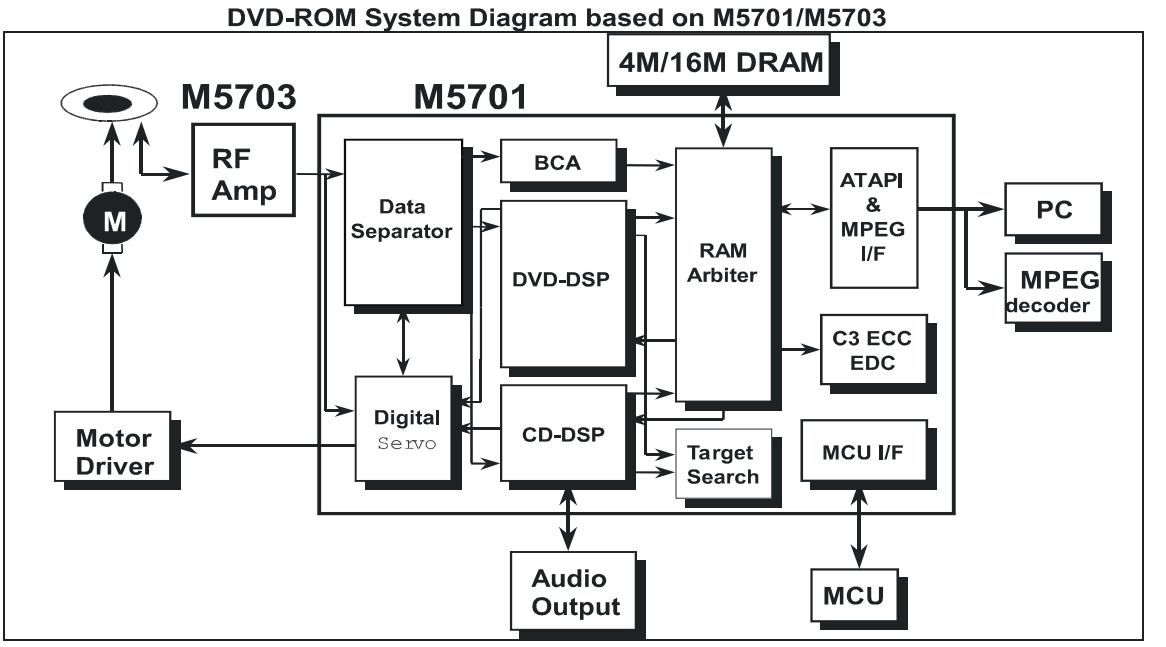


-- M E M O --

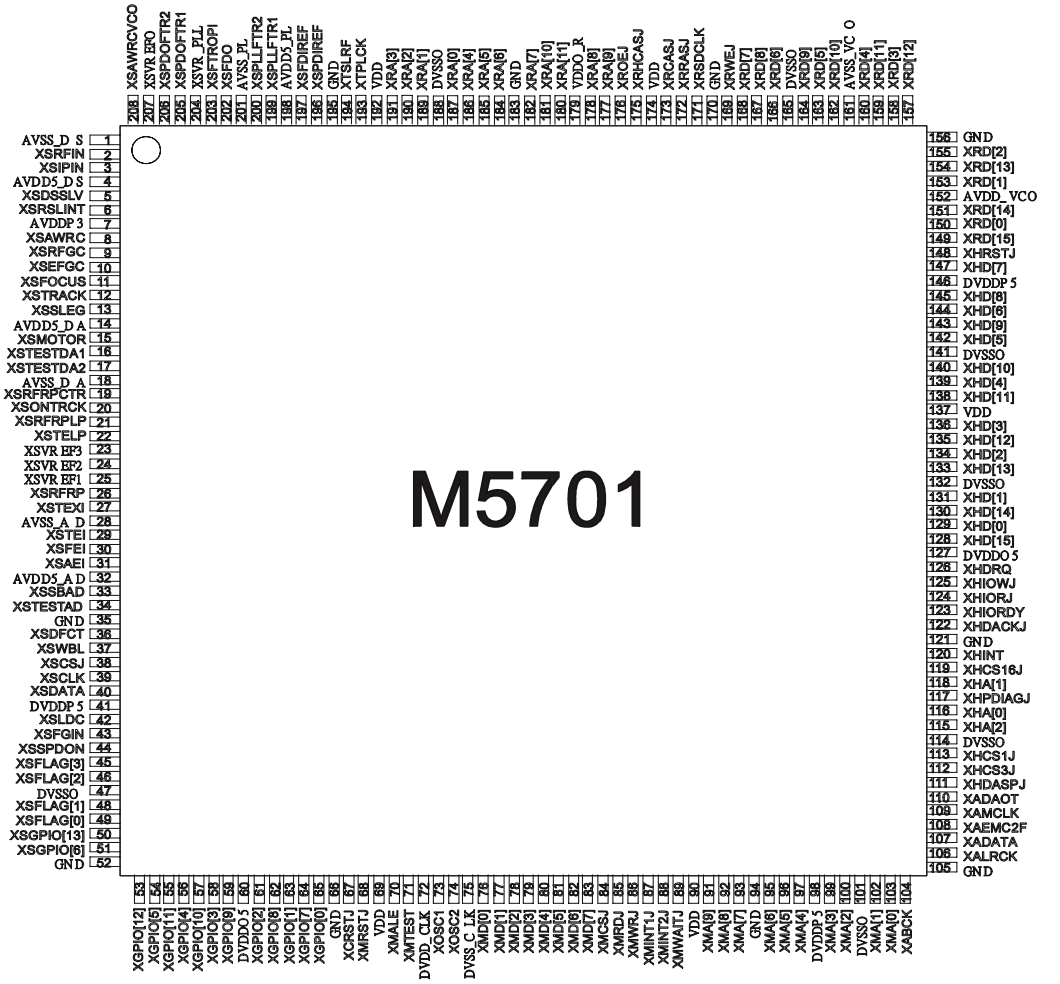
LOADER

17-1. U1 M5701 DVD-ROM Controller

FUNCTION BLOCK DIAGRAIN



PINOUT DIAGRAM



Pin Description Table:

Pin Name	Pin No.	Type	Description
Servo Data Slicer Interface Pins:			
XSRFIN	2	I/A	Analog RF signal input.
XSIPIN	3	I/A	Inverting input pin of data slicer.
XSDSSLV	5	O/A	Slice level output.
XSRSLINT	6	I/A	Reference current setting pin for analog data slicer.
Servo DAC Interface Pins:			
XSAWRC	8	O/A	Output for increasing VCO range. Analog output from DAC buffer.
XSRFGC	9	O/A	RF gain control output.
XSEFGC	10	O/A	E,F gain control output.
XSFOCUS	11	O/A	Output voltage level for focusing buffer IC.
XSTRACK	12	O/A	Output voltage level for tracking buffer IC.
XSSLEG	13	O/A	Output voltage level for sledge buffer IC.
XSMOTOR	15	O/A	Output voltage level for spindle motor buffer IC.
XSTESTDA1	16	O/A	Reserved pin for DA output #1.
XSTESTDA2	17	O/A	Reserved pin for DA output #2.
XSRFRPCTR	19	O/A	Center level voltage of RFRP.
XSONTRCK	20	O/A	On-track signal.
Servo Comparator Interface Pins:			
XSRFRPLP	21	I /A	High bandwidth low pass filter input for RFRP.
XSTELP	22	I /A	High bandwidth low pass filter input for TE.
Servo ADC Interface Pins:			
XSVREF3	23	I / A	4.2V reference voltage.
XSVREF2	24	I / A	2.1V reference voltage.
XSVREF1	25	I / A	0V reference voltage.
XSRFRP	26	I / A	RF ripple/envelope.
XSTEXI	27	I / A	Tracking zero crossing
XSTEI	29	I / A	Tracking error.
XSFEI	30	I / A	Focus error.
XSAEI	31	I / A	Alignment error.
XSSBAD	33	I / A	Sub-beam addition.
XSTESTAD	34	I / A	Reserved pin for AD input.
Servo PLL Interface Pins:			
XSPDIREF	196	I / A	Phase detector reference current generator. Connect a resistor between

XALRCK	106	O	**1. Audio Left-Right Clock.** Output to external DAC for audio playback function for indicating the left/right channels. **2. Test pin 9.**
XADATA	107	O	**1. Audio Serial Data.** An output that takes in the serial disk data to external DAC for audio playback function. **2. Test pin 10.**
XAEMC2F	108	O	**1. Emphasis Output Terminal.** Sub-Q code emphasis flag output. **2. Audio Output C2PO Flag.** C2PO flag for audio data output. **3. Test pin 11.**
XAMCLK	109	O	**Audio Master Clock Output**. Master clock output for audio DAC.
XADAOT	110	O	**Digital Audio Output Terminal.** IEC-958 digital audio output.
Host Interface Pins:			
XHCS1J	113	I	This pin is used to select the command block task file registers.
XHCS3J	112	I	This pin is used to select the control block task file registers.
XHIORJ	124	I	**I/O Read**. Asserted by the host during a host I/O read operation.
XHIOWJ	125	I	**I/O Write**. Asserted by the host during a host I/O write operation.
XHDRQ	126	O	**1.DMA Request**. This pin is configured as the DMA request signal, and is used during DMA transfer between the host and the controller. This pin is tri-stated when DMA transfers are not enabled. **2.MPEG acknowledge**. This pin is used as the ACKJ signal when MPEG interface mode is selected.
XHDACKJ	122	I	**1. DMA acknowledge**. This pin is configured as DACKJ, and is used as the DMA acknowledge signal during DMA data transfers. **2. MPEG request**. This pin is used as the REQ signal when MPEG interface mode is selected.
XHCS16J	119	O	**1.16-bit data select.** This signal indicates that a 16-bit data transfer is active on the host data bus. This pin is open-drain tri-state output. **2.MPEG clock.** This pin is used as the CLOCK signal when MPEG interface mode is selected.
XHRSTJ	148	I	**Host Reset.** The reset of ATA bus
XHINT	120	O	**1.Host interrupt request.** This tri-state pin is the host interrupt request, and is asserted to indicate to the host that the controller needs attention. **2.MPEG begin**. This pin is used as the BEGIN signal when MPEG interface mode is selected.
XHPDIAGJ	117	I/O	**Passed Diagnostics.** This pin is used as the Passed Diagnostics signal, and may be an input or an open-drain output.
XHDASPJ	111	I/O	**Drive Active-Slave Present.** This pin is used as the Drive Active/ Slave Present signal, and is an input or an open-drain output. This pin is used for Master/Slave drive communication and/or for driving an LED.

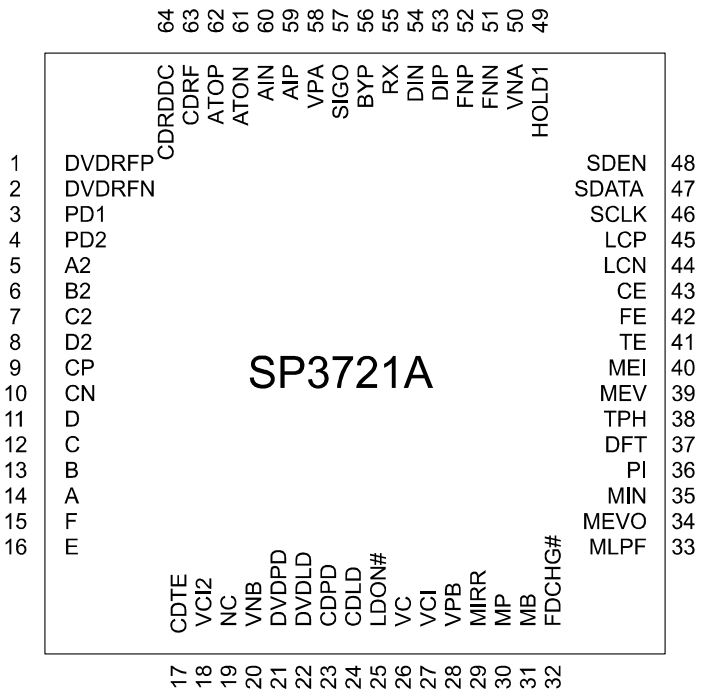
XRCASJ	173	O	**RAM Column Address.** This signal is used as column address output to external DRAM. After RSTJ is asserted, this signal will be high.
XRHCASJ	175	O	**RAM High Column Address**. This signal is used as high bytes column address output to external DRAM buffer for two CAS type DRAM. After RSTJ is asserted, this signal will be high.
XRA[11:0]	180,181, 177,178, 182,184, 185,186, 191,190, 189,187	O	**1. RAM Address lines.** These are bits 11-0 for addressing the buffer memory. **2. Hardware setting.** The bits 6-0 are used as hardware setting for some functions. RA[6] : Test Mode Clock Selection. 0 : Select test mode. 1 : Normal mode. RA[5] : System clock frequency selection. 0 : 33MHz. 1 : 66MHz. RA[4] : IDE master/slave. 0 : Master. 1 : Slave. RA[3] : MCU CSJ active level. 0 : Active high. 1 : Active low. RA[2-1] : MCU type selection. 00 : 16 bit MCU type 2. 01 : 16 bit MCU type 1. 10 : Motorola 8 bit. 11 : Intel 8032 series. RA[0] : Only for testing.
XRD[15:0]	149,151, 154,157, 159,162, 164,167, 168,166, 163,160, 158,155, 153,150	I/O	**RAM Data bus**. These signals are the 8-bit parallel data lines to/from the buffer memory.

Pin Name	Pin No.	Description
Power Pins:		
AVDD5_DS	4	**Analog Power +5V for Data Slicer part.**
AVDD5_DA	14	**Analog Power +5V for DAC part.**
AVDD5_AD	32	**Analog Power +5V for ADC part.**
AVDD5_PL	198	**Analog Power +5V for Data PLL part.**
AVDDP3	7	**Analog Power +3.3V for PAD of Analog part.**
DVDDO5	60,127	**Power +5V for post-driver of PAD of digital 5V area.**
VDDO_R	179	**Power +3.3V for post-driver of PAD of RAM interface part.**
DVDD_CLK	72	**Power +3.3V for Clock Synthesizer part.**
DVDDP5	41,98, 146	**Power +5V for PAD of digital part.**
VDD	69,90, 137,152, 174, 192	**Power + 3.3V for digital core logic and pre-driver of digital pad.**
AVSS_DS	1	**Analog Ground for Data Slicer part.**
AVSS_DA	18	**Analog Ground for DAC part.**
AVSS_AD	28	**Analog Ground for ADC part.**
AVSS_PL	201	**Analog Ground for Data PLL part.**
DVSSO	47,101, 114,132, 141,165, 188	**Digital Ground for post-driver of PAD.**
DVSS_CLK	75	**Digital Ground for Clock Synthesizer part.**
GND	35,52, 66,94, 105,121, 156,161, 170,183, 195	**Digital Ground for core logic and pad.**

U2 SP3721A DVD-ROM Controller Chip

PIN DESCRIPTION

PIN DESPRIPTION TABLE:

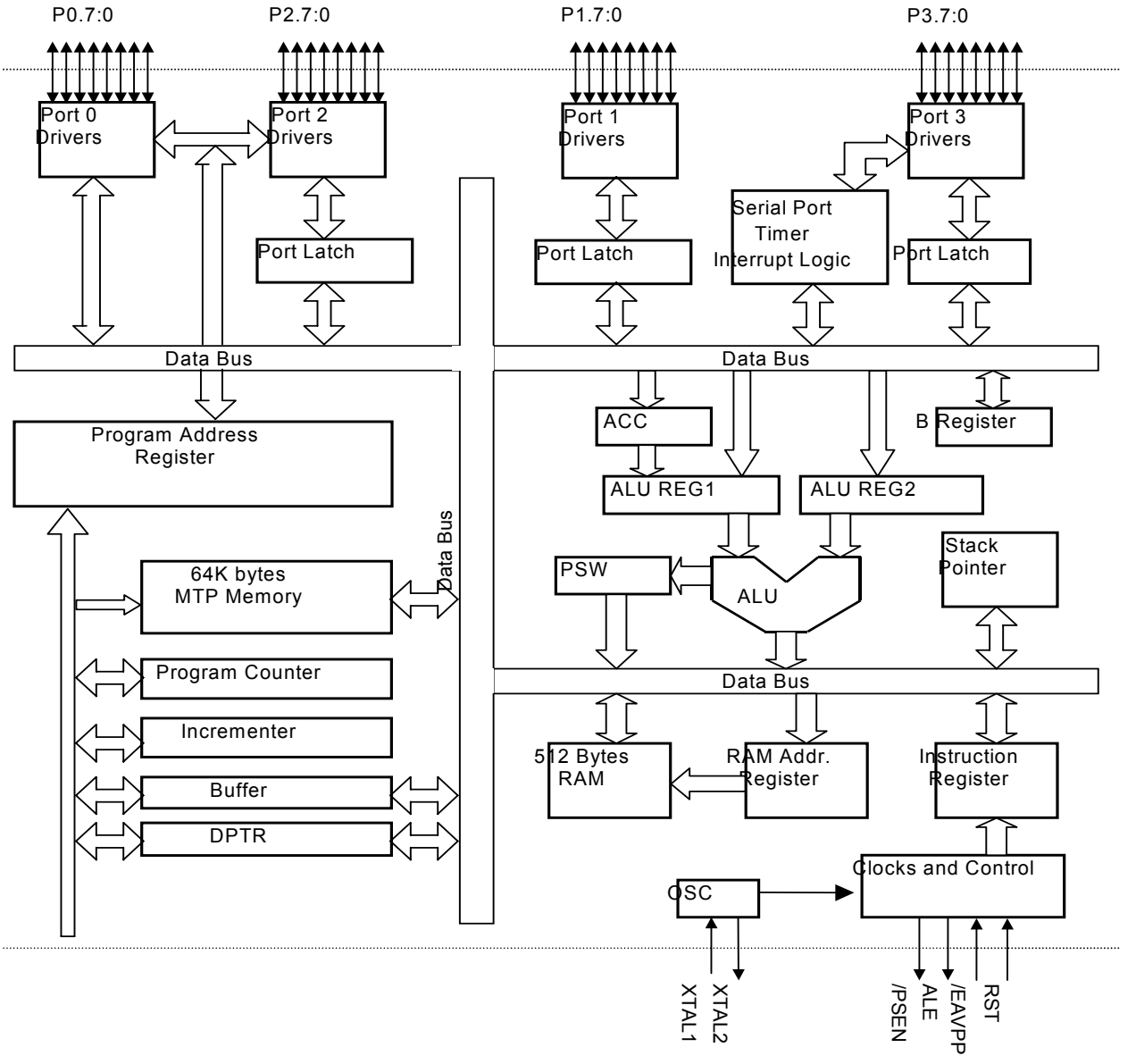


Name	Number	Type	Description
Input Pins:			
DVDRFP DVDRFN	1,2	I	**RF Signal Inputs.** Differential RF signal attenuator input pins.
CDRF	63	I	**RF Signal Input.** Single-ended RF signal attenuator input pin.
AIP, AIN	59,60	I	**AGC Amplifier Inputs.** Differential AGC amplifier input pins.
DIP, DIN	53,54	I	**Analog inputs for RF Single Buffer.** Differential analog inputs to the

Output Pins:			
ATOP/ATON	62,61	O	**Differential Attenuator Output**. Attenuator outputs.
FNP, FNN	52,51	O	**Differential Normal Output**. Filter normal outputs.
SIGO	57	O	**Single Ended Normal Output**. Single-ended RF output.
CDRFDC	64	O	**CD RF Signal Output**. Single ended CD RF summing output.
FE	42	O	**Focusing Error Signal Output**. Focus error output reference to VCI.
TE	41	O	**Tracking Error Signal Output**. Tracking error output reference to VCI.
CE	43	O	**Center Error Signal Output**. Center error output reference to VCI.
MEVO	34	O	**SIGO Bottom Envelope Output**. Bottom envelope for Mirror detection.
DFT	37	O	**Defect Output**. Pseudo CMOS output. When a defect is detected, the DFT output goes high. Also the servo AGC output can be monitored at this pin, when CAR bits 7-4 are 011
MIRR	29	O	**Mirror Detect Output**. Mirror Detect comparator output. Pseudo CMOS output.
PI	36	O	**Pull-in Signal Output**. The summing signal output of A,B,C,D or PD1, PD2 for mirror detection. Reference to VCI.
DVDLD	22	O	**APC output**. DVD APC output pin to control the laser power.
CDLD	24	O	**APC output**. CD APC output pin to control the laser power.
Analog Pins:			
BYP	56	I/O	The RF AGC integration capacitor CBYP, is connected between BYP and VPA.
CP	9	I/O	**Differential Phase tracking LPF pin**. An external capacitance is connected between this pin and the CN pin.
CN	10	I/O	**Differential Phase tracking LPF pin**. An external capacitance is connected between this pin and the CP pin.
LCP	45	-	**Center Error LPF pin**. An external capacitance is connected between this pin and the LCN pin.
LCN	44	-	**Center Error LPF pin**. An external capacitance is connected between this pin and the LCP pin.
MP	30	-	**MIRR signal Peak hold pin**. An external capacitance is connected to between this pin and VPB.
MB	31	-	**MIRR signal Bottom hold pin**. An external capacitance is connected between this pin and VPB.
MEV	39	-	**Sigo Bottom Envelope pin**. An external capacitance is connected between this pin and VPB.
CDTE	17	-	**CD Tracking**. E-F Opamp output for feedback.
TPH	38	-	**PI Top Hold pin**. An external capacitance is connected between this pin and VPB.
VC	26	-	**Reference Voltage output**. This pin provides the internal DC bias reference voltage (+2.5V fix). Output impedance is less than 50ohms.
VCI	27	-	**Reference Voltage Input**. DC bias voltage input for the servo input reference.
VCI2	18	-	**Reference Voltage Input**. DC bias voltage input for the servo input reference.
RX	55	-	**Reference Resistor Input**. An external 8.2 kohm, 1% resistor is connected from this pin to ground to establish a precise PTAT (proportional to absolute temperature) reference current for the filter.
MLPF	33	-	**MIRR signal LPF pin**. An external capacitance is connected between this pin and VPB.
NC	19	-	No Connect.
Serial Port Pins:			
SDEN	48	I	**Serial Data Enable**. Serial Enable CMOS input. A high level input enables the serial port. (Not to be left open).
SDATA	47	I/O	**Serial Data**. Serial data bi-directional CMOS pin. NRZ programming data for the internal registers is applied to this input. (Not to be left open).
SCLK	46	I	**Serial Clock**. Serial Clock CMOS input. The clock applied to this pin is synchronized with the data applied to SDATA. (Not to be left open).

Pin Description Table (continued)

Name	Number	Type	Description
Power Pins:			
VPA	58		**Power.** Power supply pin for the RF block and serial port.
VPB	28		**Power.** Power supply pin for the servo block.
VNA	50		**Ground.** Ground pin for the RF block and serial port.
VNB	20		**Ground.** Ground pin for the servo block.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P2.7:0
P1.7:0
P3.7:0
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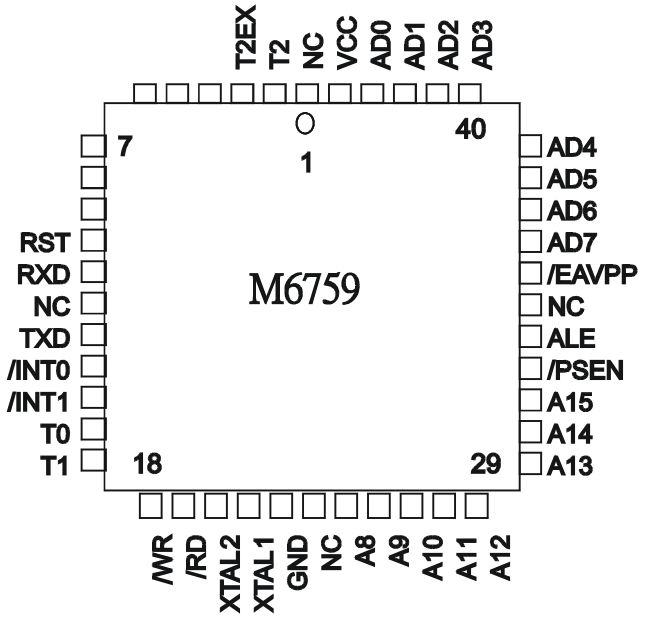
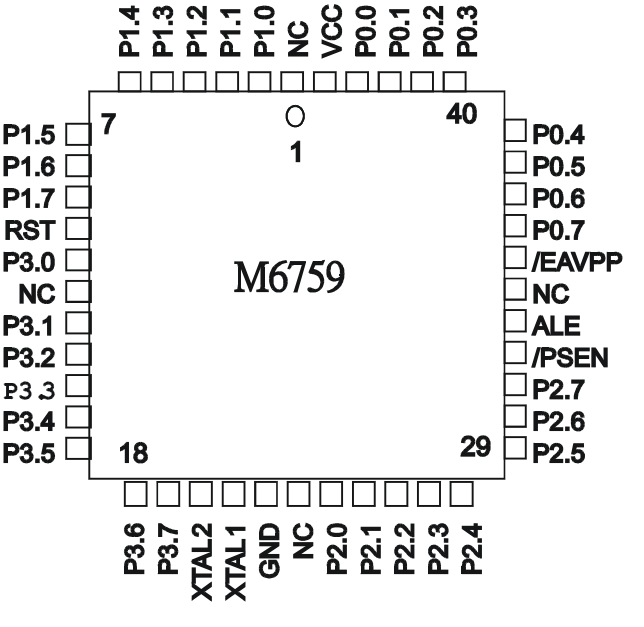
Port 2 Drivers
Port 1 Drivers
Port 3 Drivers
Port Latch
Port Latch
Serial Port
Timer
Interrupt Logic
Port Latch
Data Bus
Data Bus
Program Address Register
ACC
B Register
ALU REG1
ALU REG2
Data Bus
64K bytes MTP Memory
PSW
ALU
Stack Pointer
Program Counter
Incrementer
Buffer
DPTR
Data Bus
512 Bytes RAM
RAM Addr. Register
Instruction Register
Clocks and Control
OSC
XTAL1
XTAL2
/PSEN
ALE
/EAVPP
RST

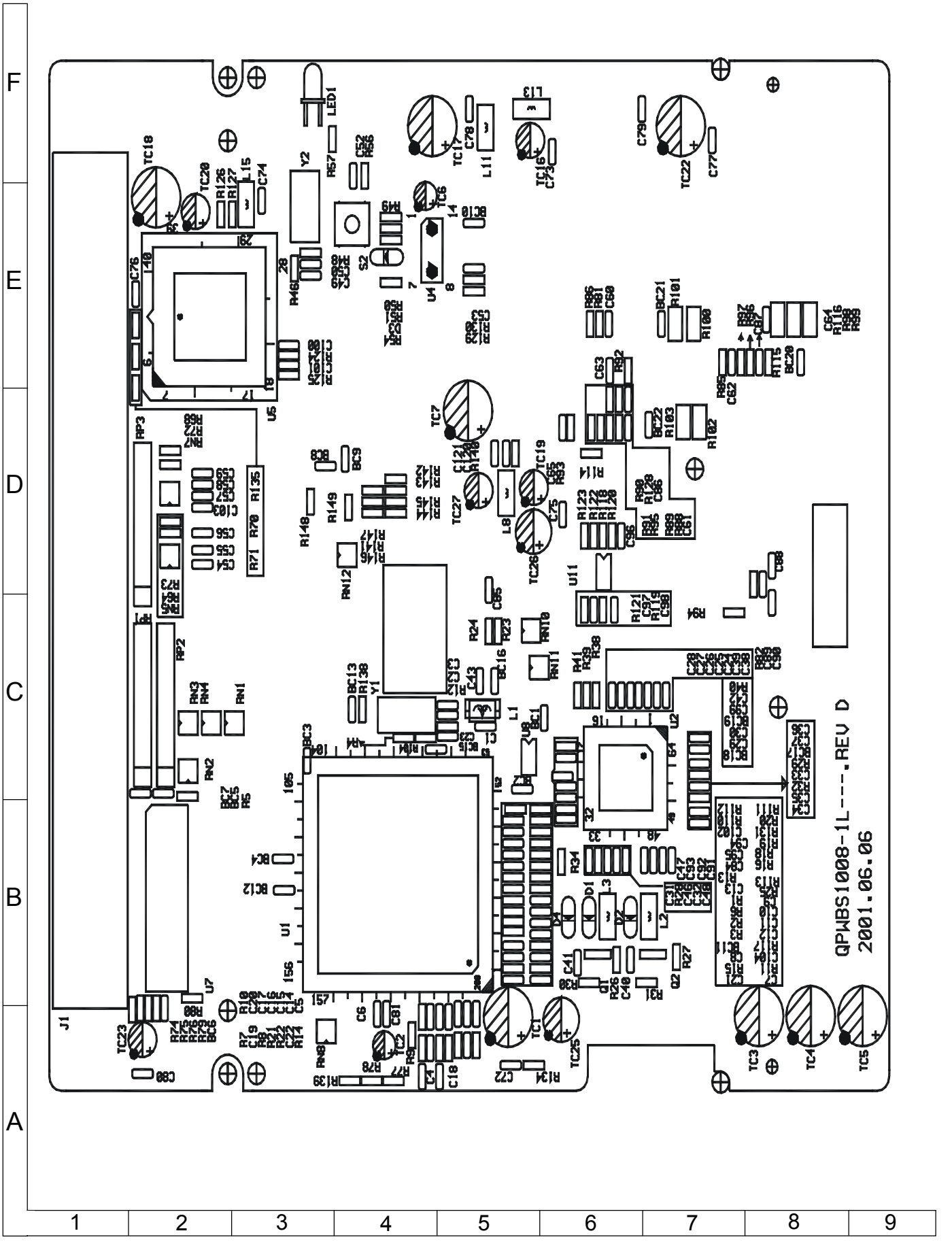

T2EX T2 NC VCC AD0 AD1 AD2 AD3
7
1
40
M6759
RST
RXD
NC
TXD
/INT0
/INT1
T0
T1
AD4
AD5
AD6
AD7
/EAVPP
NC
ALE
/PSEN
A15
A14
A13
18
29
/WR /RD XTAL2 XTAL1 GND NC A8 A9 A10 A11 A12


P1.4 P1.3 P1.2 P1.1 P1.0 NC VCC P0.0 P0.1 P0.2 P0.3
7
1
40
M6759
P1.5
P1.6
P1.7
RST
P3.0
NC
P3.1
P3.2
P3.3
P3.4
P3.5
P0.4
P0.5
P0.6
P0.7
/EAVPP
NC
ALE
/PSEN
P2.7
P2.6
P2.5
18
29
P3.6 P3.7 XTAL2 XTAL1 GND NC P2.0 P2.1 P2.2 P2.3 P2.4

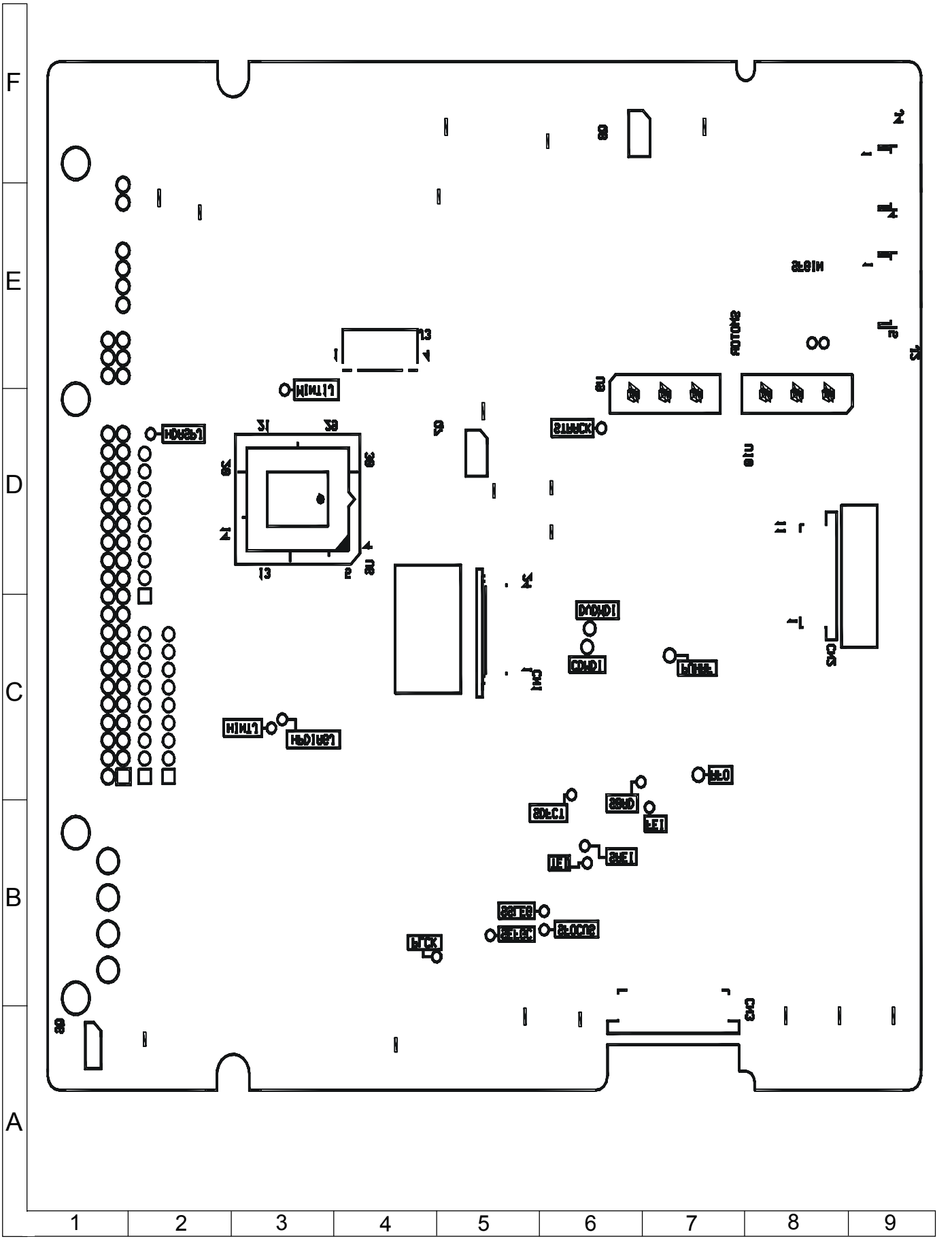
Pin Name	No. (PLCC)	Type	Description
VDD	44	IN	Power supply for internal operation, 5V input.
GND	22	IN	Ground.
P0.7-P0.0	36,37,38,39, 40,41,42, 43	I/O	Port 0 is 8 bits bi-directional I/O port with internal pull high.
AD7-0			Multiplexed address/data bus. During the time when ALE is high, the LSB of a memory address is presented. When ALE falls, the port transitions to a bi-directional data bus. This bus is used to read external ROM and read/write external RAM memory or peripherals.
RST	10	IN	Reset signal of internal circuit, it must be kept 4 clocks to ensure being recognized by internal circuit. This signal will not affect internal SRAM.
XTAL1	21	IN	Crystal In , can be used as external clock input.
XTAL2	20	OUT	Crystal out, feedback of XTAL1.
/PSEN	32	OUT	Program Store Enable Output, commonly connected to external ROM memory as a chip enable during fetching and MOVC operation. /PSEN goes high during a reset condition.
ALE	33	OUT	Address Latch Enable, used to latch external LSB 8 bit address bus from multiplexed address/data bus, commonly connect to the latch enable of 373 families. This signal will be forced high when the device is in a reset condition.
P1.7-P1.0	9,8,7,6,5,4,3 ,2	I/O	Port 1 is 8 bits bi-directional I/O port with internal pull high. All pins have an alternate function shown as below.
T2EX (P1.1)		IN	External timer/counter 2 trigger.
T2 (P1.0)		IN	External timer/counter 2.
P2.7-P2.0	31,30,29,28, 27,26,25, 24	I/O	Port 2 is 8 bits bi-directional I/O port with internal pull high. The alternate function is MSB 8 bit address bus
A15-A8		OUT	This bus emits the high-order address byte during fetches from external Program Memory or during accesses to external Data Memory that use 16-bit addresses (MOVX @ DPTR). During accesses to external Data Memory that use 8-bit addresses (MOVX @ Ri), Port 2 emits the contents of the P2 Special Function Register.
P3.7-P3.0	19,18,17,16, 15,14,13, 11	I/O	Port 3 is an 8-bit bi-directional I/O port with internal pull high. The reset condition of this port is with all bits at a logic 1. Port 3 also have alternate function list below
/RD (P3.7)		OUT	External data memory read strobe.
/WR (P3.6)		OUT	External data memory writes strobe.
T1 (P3.5)		IN	External timer/counter 1.
T0 (P3.4)		IN	External timer/counter 0.
/INT1 (P3.3)		IN	External interrupt 1 (Negative Edge Detect).
/INT0 (P3.2)		IN	External interrupt 0 (Negative Edge Detect).
TXD (P3.1)		OUT	Serial port output.
RXD (P3.0)		IN	Serial port input.
/EAVPP	35	IN	The pin must be externally held low to enable the device to fetch code from external program memory. If /EAVPP is held high, the device executes from internal program memory. /EAVPP is internal latched on reset. This pin also receives the 12V programming voltage (V_{PP}) during FLASH programming.
NC	1,12,23,34	NC	These pins should not be connected for any purpose

17-2. LOADER PWB

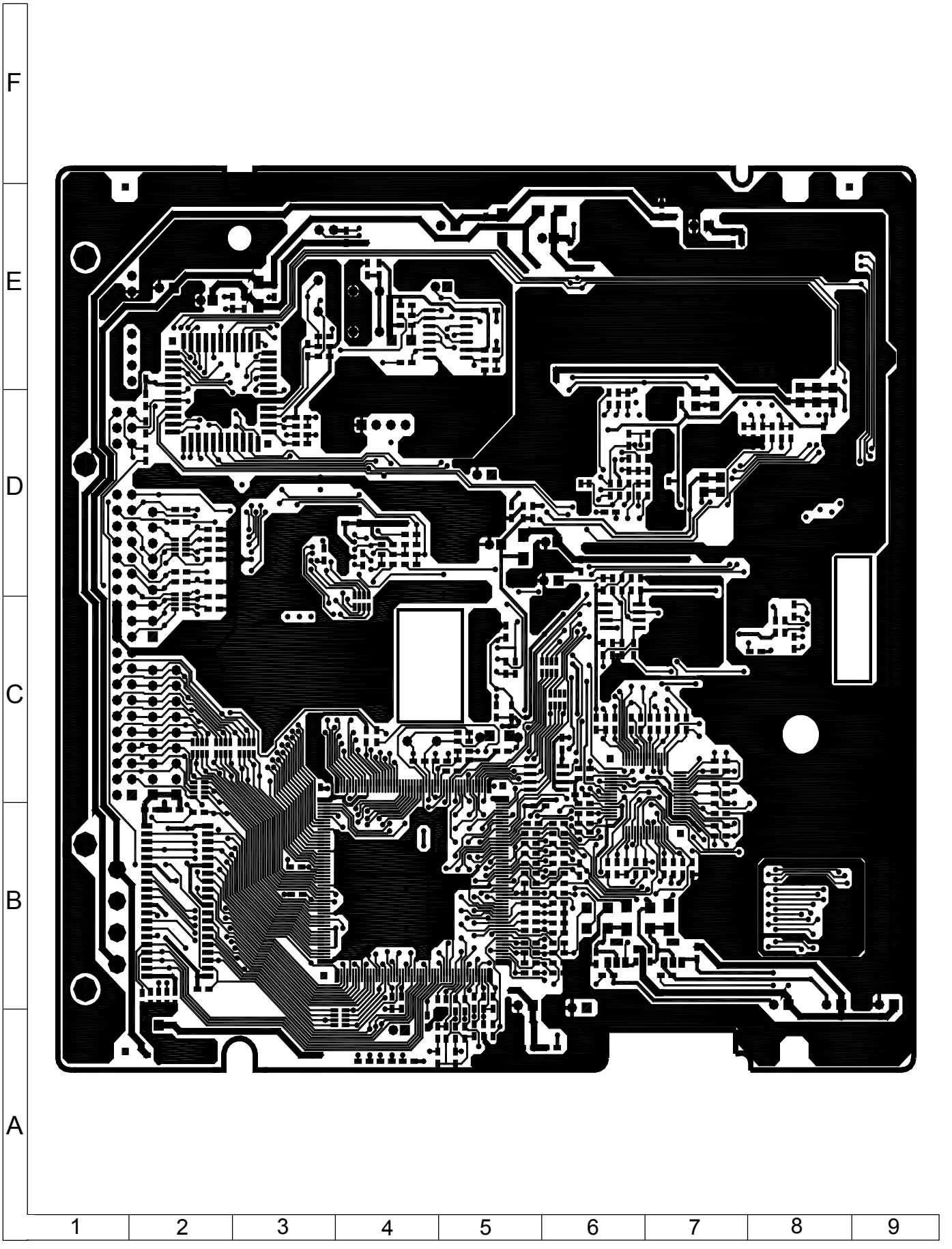
17-2-1. Component Side SIDE A



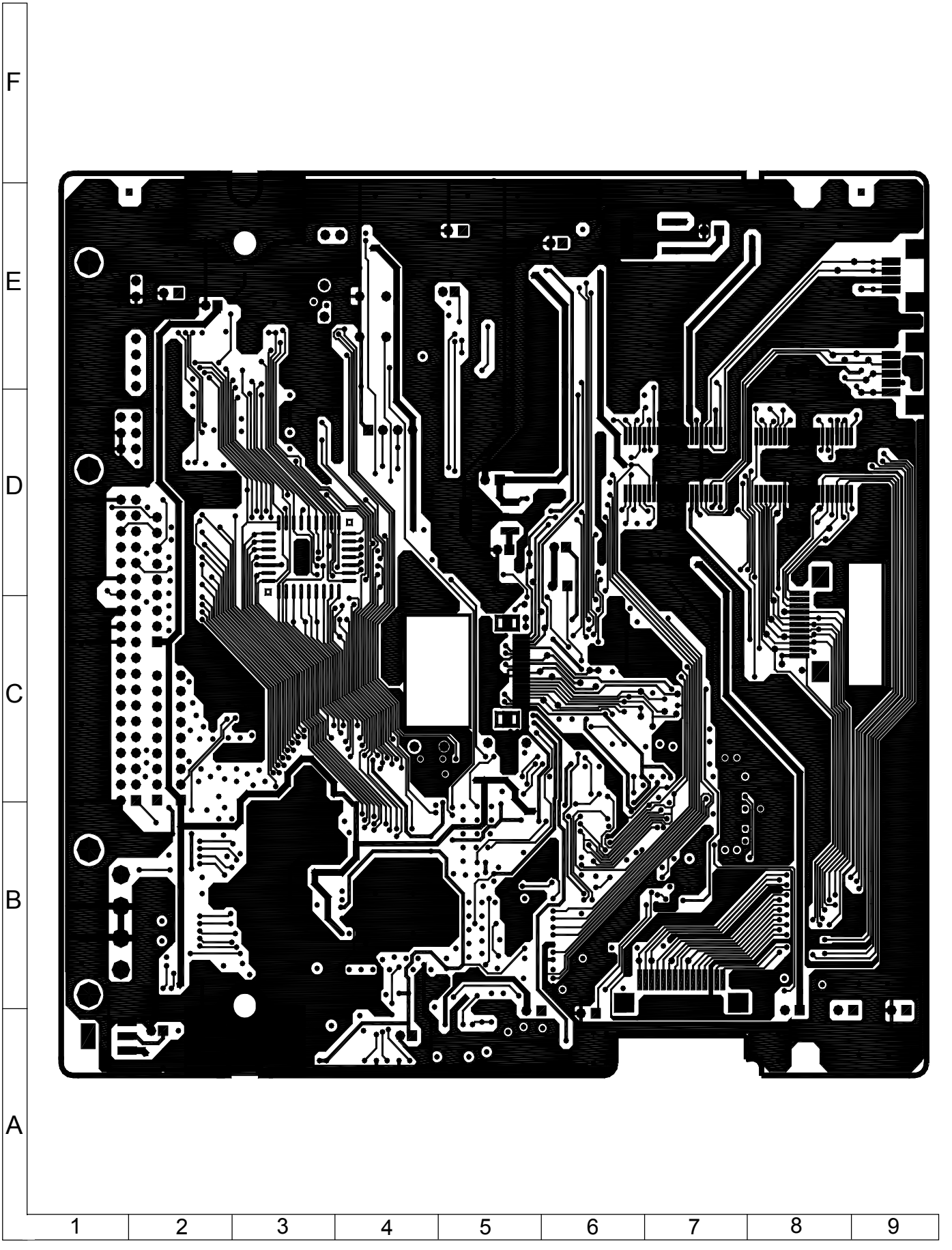
17-2-2. Component Side SIDE B



17-2-3. Wiring Side SIDE A

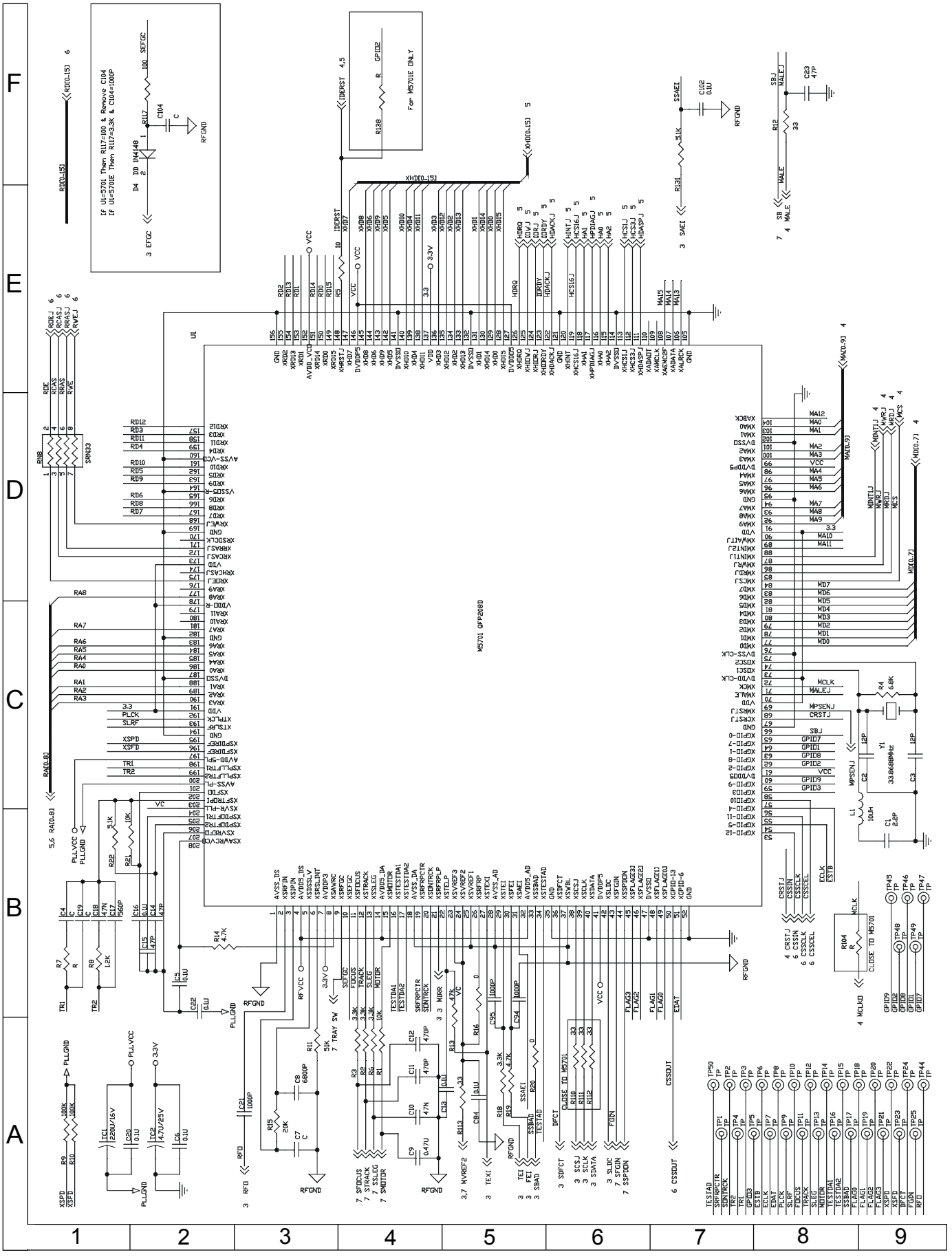


17-2-4. Wiring Side SIDE B

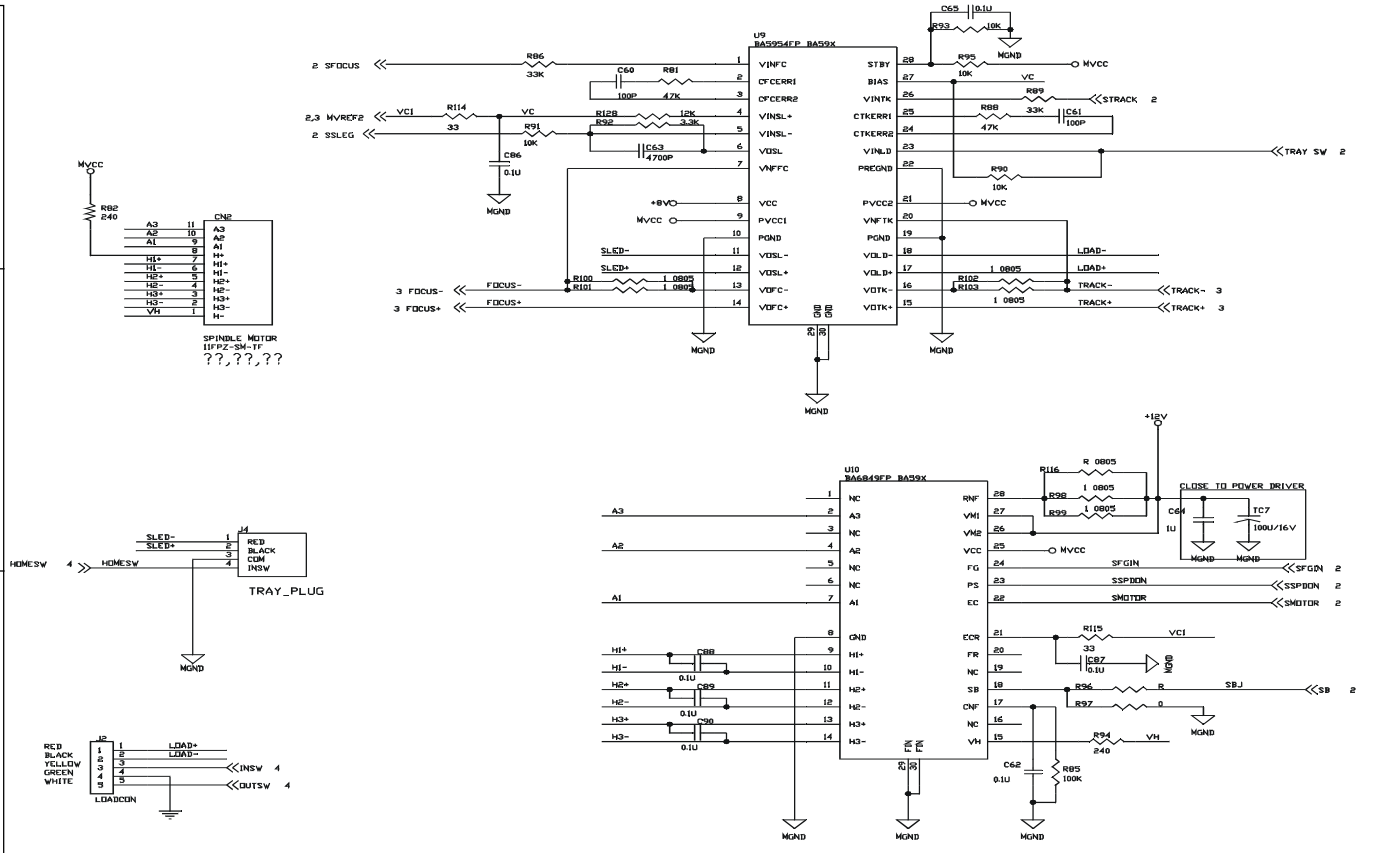


17-3. LOADER CIRCUIT SCHEMATIC DIAGRAM

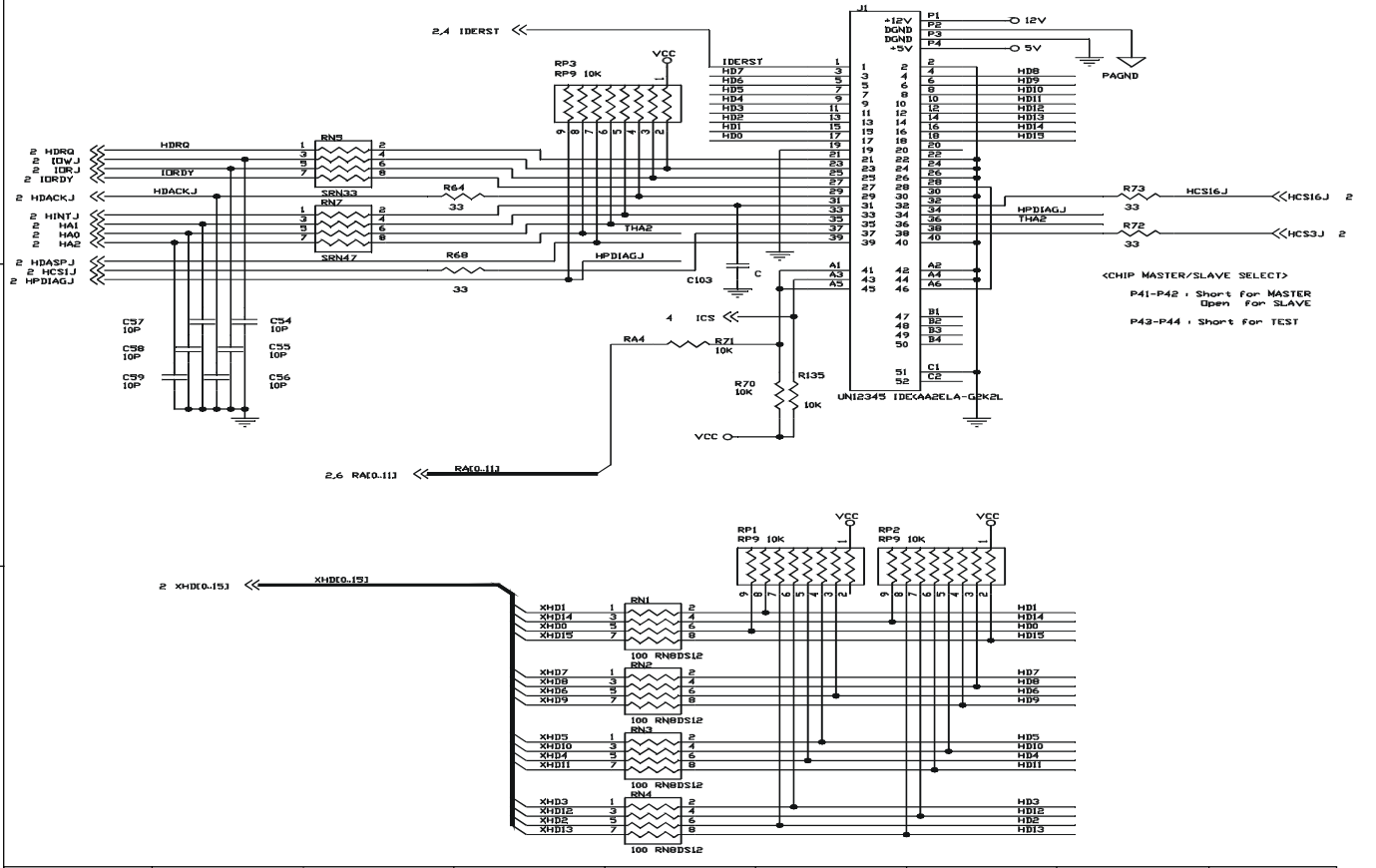
17-3-1. DECODER



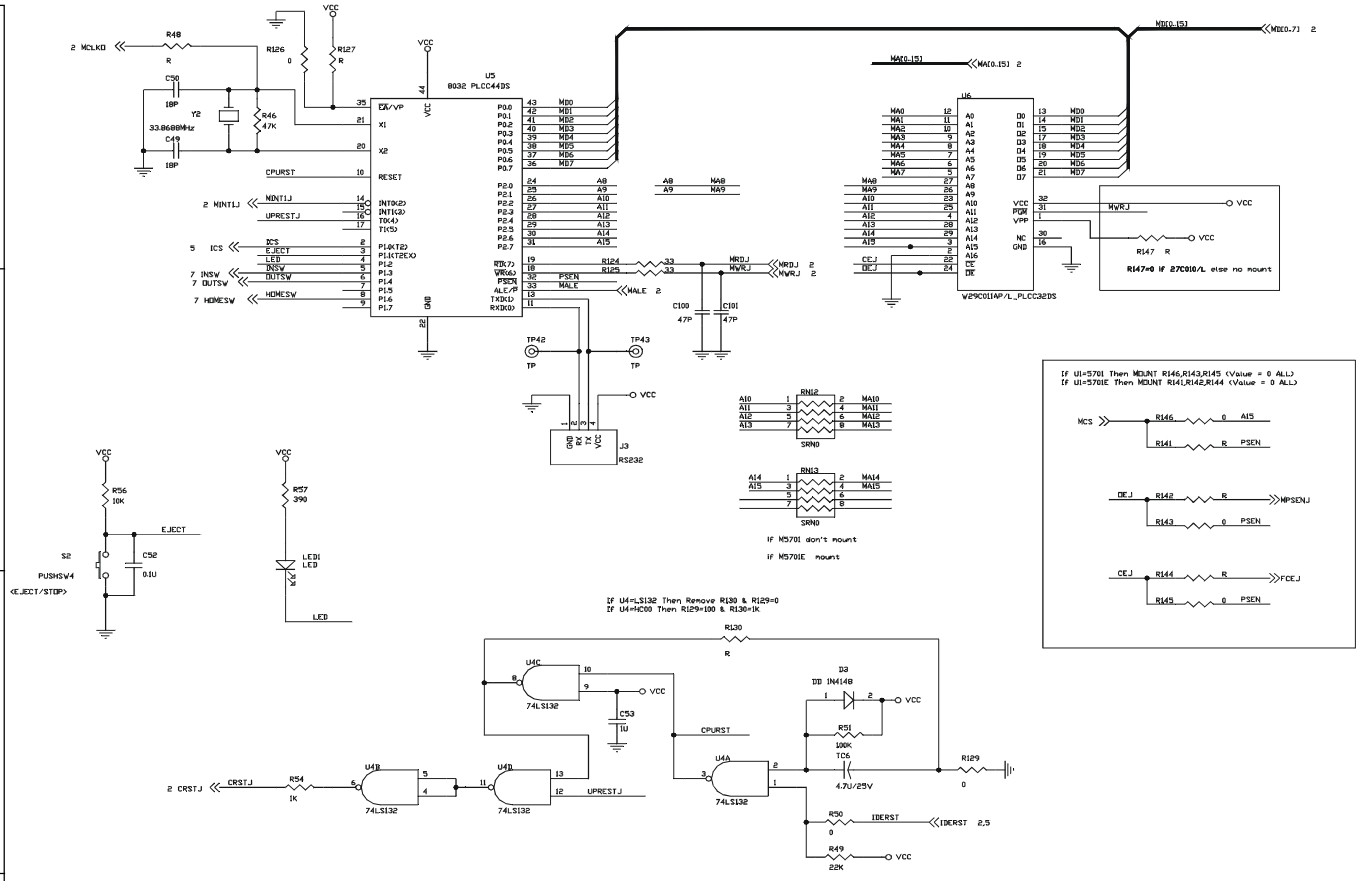
17-3- 2. DRIVE



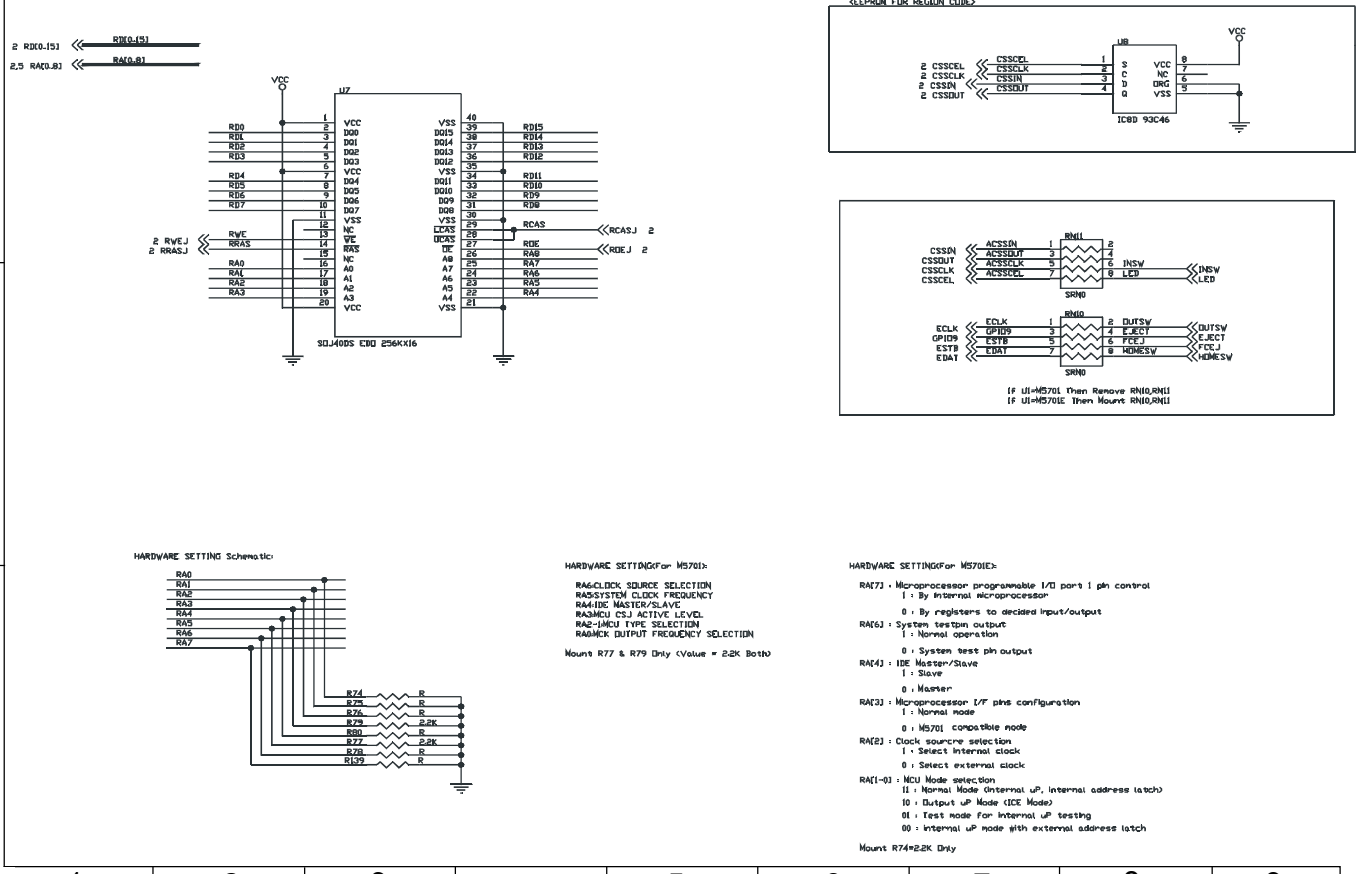
17-3-2. IDE



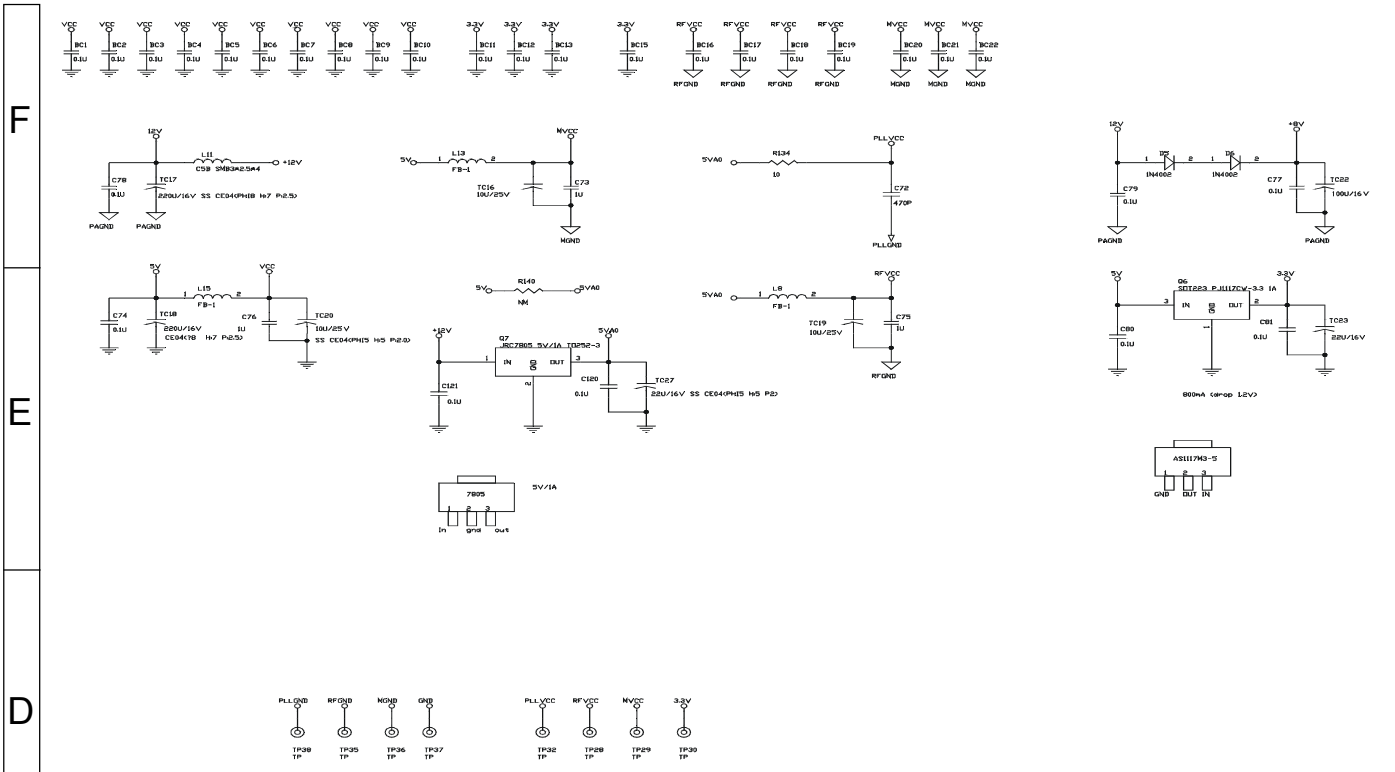
17-3-3. INTEL



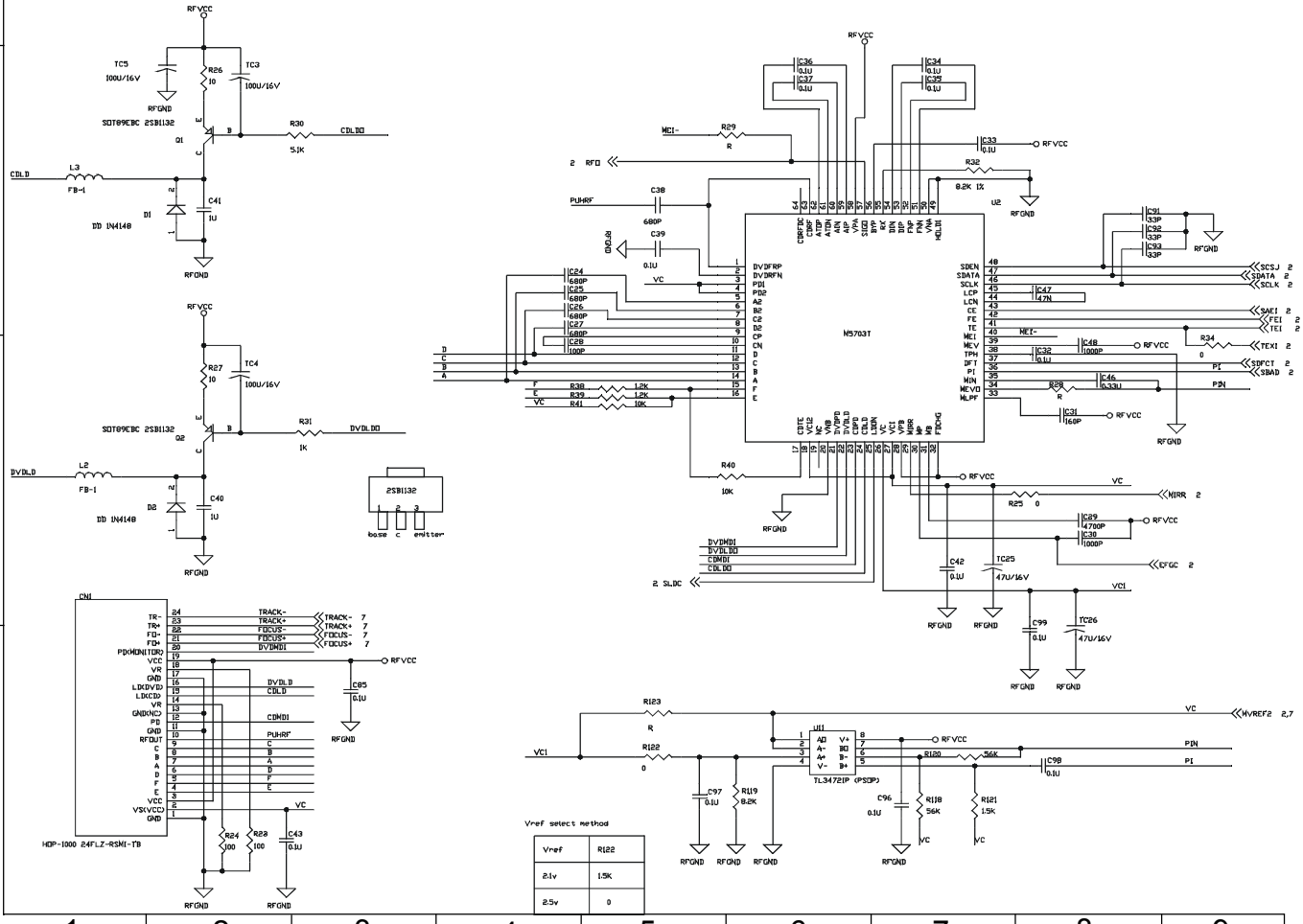
17-3-4. MEMORY



17-3-5. POWER



17-3-6. PREAMP



17- 4. PWB COMPONENT LIST

SL-120H PWB COMPONENT LIST

ELECTROLYTIC CAPACTIORS

TC23	9HLATF1CG226M-	CAP 22U 16V(DIP) SS TYPE	AA
TC2	9HLATF1CG475M-	CAP 4.7U/16V SS TYPE (DIP)	
TC6	9HLATF1CG475M-	CAP 4.7U/16V SS TYPE (DIP)	
TC16	9HLATF1AG106M-	CAP 10U/10V SS TYPE (DIP)	
TC19	9HLATF1AG106M-	CAP 10U/10V SS TYPE (DIP)	
TC20	9HLATF1AG106M-	CAP 10U/10V SS TYPE (DIP)	
TC25	9HLATF1CG476M-	CAP 47U/16V SS TYPE (DIP)	
TC26	9HLATF1CG476M-	CAP 47U/16V SS TYPE (DIP)	
TC3	9HLATF1CG107M-	CAP 100U/16V SS TYPE (DIP)	
TC4	9HLATF1CG107M-	CAP 100U/16V SS TYPE (DIP)	
TC5	9HLATF1CG107M-	CAP 100U/16V SS TYPE (DIP)	
TC22	9HLATF1CG107M-	CAP 100U/16V SS TYPE (DIP)	
TC1	9HLATF1CG227M-	CAP 220U/16V 8*7 (DIP)	
TC17	9HLATF1CG227M-	CAP 220U/16V 8*7 (DIP)	
TC18	9HLATF1CG227M-	CAP 220U/16V 8*7 (DIP)	

CERAMIC CAPACTIORS

BC1	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC2	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC3	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC4	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC5	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC7	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC8	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC9	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC10	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC11	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC12	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC13	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC15	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC16	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC17	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC18	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC19	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC20	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC21	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
BC22	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C5	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C6	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C8	9HLFHN1HY682K-	CAP 6800P 50V 0603 +-10%
C9	9HLFHN1CY474Z-	CAP 0.47U 16V 0603 +80-20%
C10	9HLFHN1HY473Z-	CAP 0.047U 50V 0603 Y5 +-10%
C11	9HLFHN1HY471J-	CAP 470P 50V 0603 Y5 +-5%
C12	9HLFHN1HY471J-	CAP 470P 50V 0603 Y5 +-5%
C13	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C16	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C17	9HLFHN1HY561J-	CAP 560P 50V 0603 Y5 +-5%
C18	9HLFHN1HY473Z-	CAP 0.047U 50V 0603 Y5 +-10%
C20	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C21	9HLFHN1HY102K-	CAP 1000P 50V 0603 Y5 +-10%
C22	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C28	9HLFHN1HY101J-	CAP 100P 50V 0603 Y5 +-5%
C29	9HJFHN1HY472K-	CAP 4700P 50V 0603 Y5 +-10%
C30	9HLFHN1HY102K-	CAP 1000P 50V 0603 Y5 +-10%
C32	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C33	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C34	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C35	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C36	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C37	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C39	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C42	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C43	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C46	9HLFHN1CY334Z-	CAP 0.33U 0603 16V CAP. Y5 +80%-20%
C47	9HLFHN1HY473Z-	CAP 0.047U 50V 0603 Y5 +-10%
C48	9HLFHN1HY102K-	CAP 1000P 50V 0603 Y5 +-10%
C52	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C54	9HLFHN1HY100J-	CAP 10P 50V 0603 Y5 +-5%
C55	9HLFHN1HY100J-	CAP 10P 50V 0603 Y5 +-5%
C56	9HLFHN1HY100J-	CAP 10P 50V 0603 Y5 +-5%
C57	9HLFHN1HY100J-	CAP 10P 50V 0603 Y5 +-5%
C58	9HLFHN1HY100J-	CAP 10P 50V 0603 Y5 +-5%
C59	9HLFHN1HY100J-	CAP 10P 50V 0603 Y5 +-5%
C60	9HLFHN1HY101J-	CAP 100P 50V 0603 Y5 +-5%
C61	9HLFHN1HY101J-	CAP 100P 50V 0603 Y5 +-5%
C62	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C63	9HJFHN1HY472K-	CAP 4700P 50V 0603 Y5 +-10%
C72	9HLFHN1HY471J-	CAP 470P 50V 0603 Y5 +-5%
C74	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C77	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C78	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C79	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C80	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C81	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C84	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C85	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C86	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C87	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C88	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C89	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C90	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C91	9HLFHN1HY330J-	CAP 33P 50V 0603 Y5 +-5%
C92	9HLFHN1HY330J-	CAP 33P 50V 0603 Y5 +-5%
C93	9HLFHN1HY330J-	CAP 33P 50V 0603 Y5 +-5%
C94	9HLFHN1HY102K-	CAP 1000P 50V 0603 Y5 +-10%
C95	9HLFHN1HY102K-	CAP 1000P 50V 0603 Y5 +-10%
C96	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C97	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C98	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C99	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C102	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%
C120	9HLFHN1CY104Z-	CAP 0.1U 16V 0603 +80-20%

DIODES

D1	9HL1N4148——	DIODE 1N4148 SMT
D2	9HL1N4148——	DIODE 1N4148 SMT
D3	9HL1N4148——	DIODE 1N4148 SMT
D4	9HL1N4148——	DIODE 1N4148 SMT

TRANSISTORS

Q1	9HL2SB1132——	Medium Power Transistor(-32V,-1A)SMT MPT3
Q2	9HL2SB1132——	Medium Power Transistor(-32V,-1A)SMT MPT3

RESISTORS

R1	9HLHNVG—103J-	RES 10K 0603 1/16W +-5%
R2	9HLHNVG—332J-	RES 3.3K 0603 1/16W +-5%
R3	9HLHNVG—332J-	RES 3.3K 0603 1/16W +-5%
R6	9HLHNVG—332J-	RES 3.3K 0603 1/16W +-5%
R9	9HLHNVG—104J-	RES 100K 0603 1/16W +-5%
R10	9HLHNVG—104J-	RES 100K 0603 1/16W +-5%
R11	9HLHNVG—513J-	RES 51K 0603 1/16W +-5%
R13	9HLHNVG—473J-	RES 47K 0603 1/16W +-5%
R16	9HLHNVG—000J-	RES 0 0603 1/16W +-5%
R15	9HLHNVG—203J-	RES 20K 0603 1/16W +-5%
R18	9HLHNVG—332J-	RES 3.3K 0603 1/16W +-5%
R20	9HLHNVG—000J-	RES 0 0603 1/16W +-5%
R21	9HLHNVG—103J-	RES 10K 0603 1/16W +-5%
R23	9HLHNVG—101J-	RES 100 0603 1/16W +-5%
R24	9HLHNVG—101J-	RES 100 0603 1/16W +-5%
R25	9HLHNVG—000J-	RES 0 0603 1/16W +-5%
R31	9HLHNVG—102J-	RES 1K 0603 1/16W +-5%
R34	9HLHNVG—000J-	RES 0 0603 1/16W +-5%
R40	9HLHNVG—103J-	RES 10K 0603 1/16W +-5%
R41	9HLHNVG—103J-	RES 10K 0603 1/16W +-5%
R46	9HLHNVG—473J-	RES 47K 0603 1/16W +-5%
R49	9HLHNVG—223J-	RES 22K 0603 1/16W +-5%

L-120H PWB COMPONENT LIST (Continued)

R50	9HLHNVG—000J-	RES 0 0603 1/16W +-5%
R51	9HLHNVG—104J-	RES 100K 0603 1/16W +-5%
R54	9HLHNVG—102J-	RES 1K 0603 1/16W +-5%
R56	9HLHNVG—103J-	RES 10K 0603 1/16W +-5%
R70	9HLHNVG—103J-	RES 10K 0603 1/16W +-5%
R71	9HLHNVG—103J-	RES 10K 0603 1/16W +-5%
R81	9HLHNVG—473J-	RES 47K 0603 1/16W +-5%
R82	9HLHNVG—241J-	RES 240 0603 1/16W +-5%
R85	9HLHNVG—104J-	RES 100K 0603 1/16W +-5%
R86	9HLHNVG—333J-	RES 33K 0603 1/16W +-5%
R88	9HLHNVG—473J-	RES 47K 0603 1/16W +-5%
R89	9HLHNVG—333J-	RES 33K 0603 1/16W +-5%
R90	9HLHNVG—103J-	RES 10K 0603 1/16W +-5%
R91	9HLHNVG—103J-	RES 10K 0603 1/16W +-5%
R92	9HLHNVG—332J-	RES 3.3K 0603 1/16W +-5%
R94	9HLHNVG—241J-	RES 240 0603 1/16W +-5%
R95	9HLHNVG—103J-	RES 10K 0603 1/16W +-5%
R97	9HLHNVG—000J-	RES 0 0603 1/16W +-5%
R117	9HLHNVG—101J-	RES 100 0603 1/16W +-5%
R118	9HLHNVG—563J-	RES 56K 0603 1/16W +-5%
R119	9HLHNVG—822J-	RES 8.2K 0603 1/16W+-5%
R120	9HLHNVG—563J-	RES 56K 0603 1/16W +-5%
R121	9HLHNVG—152J-	RES 1.5K 0603 1/16W +-5%
R122	9HLHNVG—000J-	RES 0 0603 1/16W +-5%
R126	9HLHNVG—000J-	RES 0 0603 1/16W +-5%
R128	9HLHNVG—123J-	RES 12K 0603 1/16W +-5%
R129	9HLHNVG—101J-	RES 100 0603 1/16W +-5%
R130	9HLHNVG—102J-	RES 1K 0603 1/16W +-5%
R135	9HLHNVG—103J-	RES 10K 0603 1/16W +-5%
R140	9HLHNVG—000J-	RES 0 0603 1/16W +-5%
R143	9HLHNVG—000J-	RES 0 0603 1/16W +-5%
R145	9HLHNVG—000J-	RES 0 0603 1/16W +-5%
R146	9HLHNVG—000J-	RES 0 0603 1/16W +-5%

RESISTOR NETWORK

RP1	9HLRA2149-1103	R/P 10K 9IN +-5% 0.125W DIP
RP2	9HLRA2149-1103	R/P 10K 9IN +-5% 0.125W DIP
RP3	9HLRA2149-1103	R/P 10K 9IN +-5% 0.125W DIP
RN1	9HLRB2088-1101	RES 100 1/16W +-5% 8P4R 0603 SMT
RN2	9HLRB2088-1101	RES 100 1/16W +-5% 8P4R 0603 SMT
RN3	9HLRB2088-1101	RES 100 1/16W +-5% 8P4R 0603 SMT
RN4	9HLRB2088-1101	RES 100 1/16W +-5% 8P4R 0603 SMT
RN5	9HLRB2088-1330	RES 33 1/16W +-5% 8P4R 0603 SMT
RN8	9HLRB2088-1330	RES 33 1/16W +-5% 8P4R 0603 SMT
RN7	9HLRB2088-1470	RES 47 1/16W +-5% 8P4R 0603 SMT

ICS

U1	9HLM5701———	IC M5701 QFP208D
U2	9HLSP3721A——	IC SP3721A M5703T 64PIN
U5	9HLM6759———	CPU M6759 44PIN 8032 PLCC44DS
U10	9HLBA6849FP—	Motor Driver for CD-ROM 28PIN HMFP BA59X
U11	9HLTL3472——	TI OP. TL3472 8PIN PSOP
Q8	9HL7808———-	JRC 7808 8V/1A Regulator TO252
U5	9HLCS1660-1—	IC SOCKET PLCC 44PIN
Q6	9HLPJ1117CW33-	3.3V/1A Regulator 3pin (SOT223)
U9	9HLBA5954FP—	BTL Driver for CD-ROM 28PIN HMFP
U4	9HL74HC00D——	IC 74HC00 14PIN SOT
U7	9HLIS41C16256-	256K*16 EDO DRAM 40 PIN SOJ TYPE

FILTERS

L1	9HLEH100K0000-	10uH DCR 2.71ohm DCI 140mA DIP Small Type
L2	9HLLN1021-1—	EMI SUPPERSSORS C5BSMB3*2.5*4 FB-1(1206)
L3	9HLLN1021-1—	EMI SUPPERSSORS C5BSMB3*2.5*4 FB-1(1206)
L8	9HLLN1021-1—	EMI SUPPERSSORS C5BSMB3*2.5*4 FB-1(1206)
L8	9HLLN1021-1—	EMI SUPPERSSORS C5BSMB3*2.5*4 FB-1(1206)
L11	9HLLN1021-1—	EMI SUPPERSSORS C5BSMB3*2.5*4 FB-1(1206)
L13	9HLLN1021-1—	EMI SUPPERSSORS C5BSMB3*2.5*4 FB-1(1206)
L15	9HLLN1021-1—	EMI SUPPERSSORS C5BSMB3*2.5*4 FB-1(1206)

CONNECTORS

CN1	9HLCP002O-AJST	FFC CON. 24PIN 0.5Pitch Upper Contact SMT Side entry
J2	9HLCP0015-CJST	SLED PLUG CON. 5PIN 1.5 mm Pitch SMT Side entry
J1	9HLCS1594C1—	CONN DVD-ROM 5 IN 1 POWER&IDE
J8	9HLCP0015-CJST	SLED PLUG CON. 5PIN 1.5 mm Pitch SMT Side entry

RESONATORS

Y1	9HLCC1009-1—	RESONATOR 33.86MHz(DIP)
	or	
	9HLCC1004-1—	RESONATOR 33.86MHz(DIP)
Y2	9HLCC1009-1—	RESONATOR 33.86MHz(DIP)
	or	
	9HLCC1004-1—	RESONATOR 33.86MHz(DIP)

17-5. MECHANISM PARTS (DVD ROM)

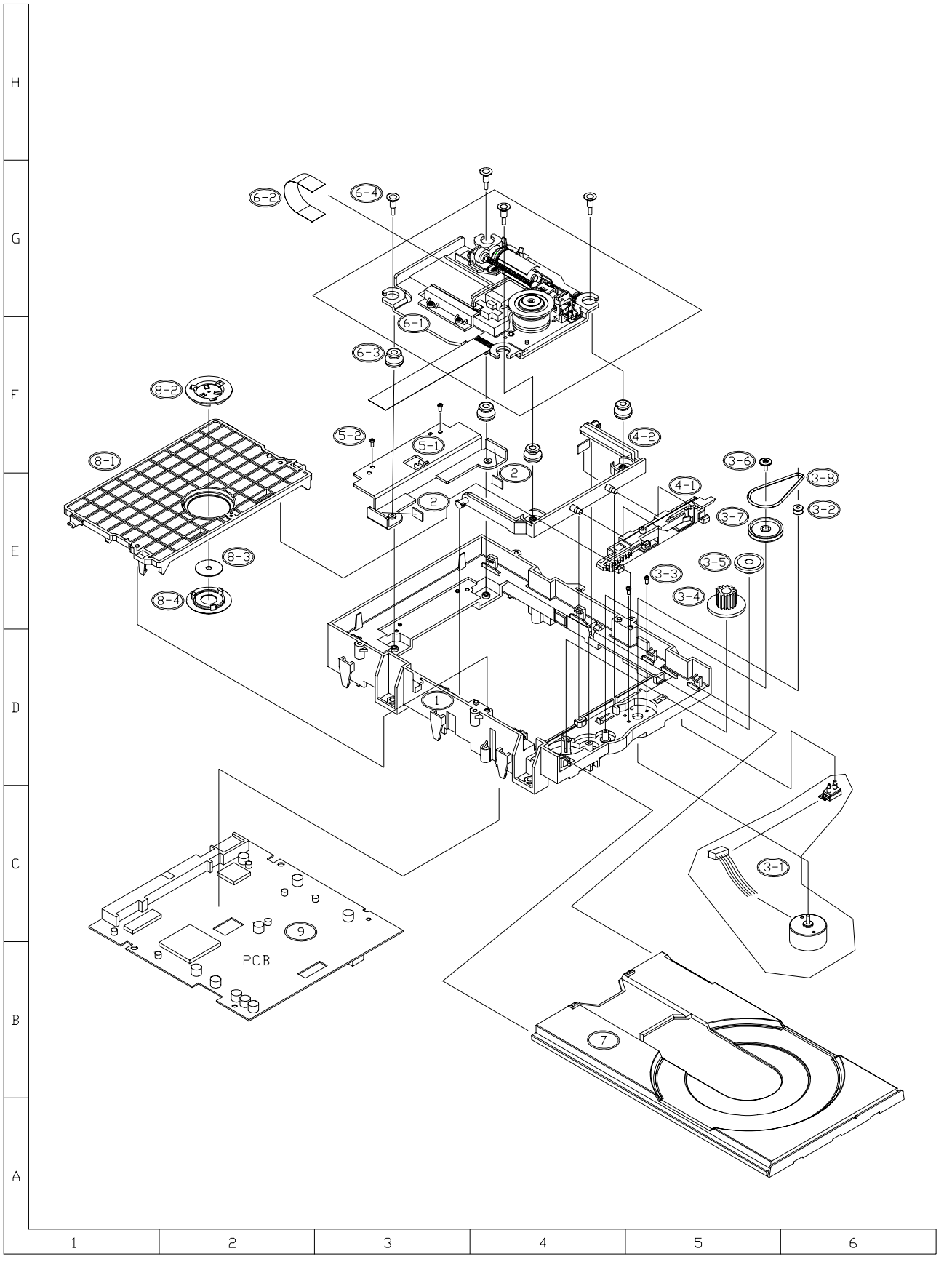
MECHANISM PARTS

BSL-101H (Serial No. -111H)
(Serial No. -120H)

Ref. No.	Part No.	Part Name & Description	Pcs
1	9HLSP0024-1F	Loading Base	1
3-1a	9HLTV1010C1	Loading Motor	1
3-2	9HLYP0008-1F	Motor Pulley	1
3-7	9HLYP0007-1F	Pulley	1
3-5	9HLRH0069-1F	Gear	1
3-4	9HLRH0070-1F	Tray Gear	1
3-8	9HLTK0028-1	Belt	1
3-1b	9HL-M1048-1	Loading Sw.	1
3-1c	9HLWP0325-1001	Loading Wires	1
6-1	9HLC-0002-1	Traverse Mecha	1
6-2	9HLDP1172-1W	Pick-Up Ffc	1
6-3	9HLSG0272-1	Traverse Damper	4
4-2	9HLMP0038-1F	Arm	1
4-1	9HLM-0001-1F	Slider	1
8-2	9HLYP0011-1F	Clamp-Top	1
8-3	9HLG-0118-1P	Clamp Yoke	1
8-4	9HLYP0012-1F	Clamp-Bottom	1
8-1	9HLC-0012-1F	Bracket	1
7	9HLIP0016-1F	Tray	1
6-4	9HLXZ0002-1	Damper Fixing Screw	4
3-3	9HLSN17P03000	Loading Motor Fixing Screw	2
3-6	9HLSD20P5F000	Pulley Fixing Screw	1
5-2	9HLSD26P08000	Transfer Angle Fixing Screw	2
5-1	9HLG-0120-1P	Transfer Angle	1
2	9HLSG0267-1	Cushion	3

17-6 MECHANISM EXPLODED VIEW (DVD ROM)

BSL-101H (Serial No. -111H)
(Serial No. -120H)



SHARP

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